Organ Building Catalog

7th Edition

peterson

Merging Art and Technology

Organ Control Systems

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Dear Friends,

As we prepared to print this new Organ Building Catalog, I was surprised to realize just how much our product line has changed since the last printing. More than 25 pages have been replaced or modified to reflect updates to Peterson equipment over the last four years. After more than 55 years in the business, our dedication to bringing you excellent, innovative products for the pipe organ is stronger today than ever!

A major focus of our engineering staff has been the ongoing refinement of the ICS-4000™ Integrated Control System, which has now become the system of choice for dozens of organbuilders. This powerful, state-of-the-art yet competitively priced product brings coupling, switching, combination action, piston sequencer, built-in record/playback, and full MIDI functions to organists through traditional organ controls and an attractive "21st century" control panel. We believe that no other pipe organ control system anywhere in the world supports more features, is more intuitive and convenient to use, or is more adaptable to the widely ranging requirements of new or rebuilt instruments. From the sophisticated ICS-4000 to our "lowest tech" switching and combination action systems, which have been proven in many thousands of installations worldwide, Peterson now offers a truly unmatched range of control system products to suit virtually any project.

In addition to control systems, this catalog shows you the full line of Peterson pipe-organ-related components and services, all of which are backed by our friendly and capable technical support/ customer service team. You can depend on us before, during, and long after the sale to make sure all of your expectations are met.

I hope you will enjoy exploring this catalog as much as we enjoy the privilege of working with our customers and friends on dozens of fulfilling projects each year.

Sincerely,

Scott R. Peterson
President

www.PetersonEMP.com
www.ICS4000.com
www.PipeOrgans.com
www.PetersonTuners.com
www.StroboStomp.com

Organ Control Systems

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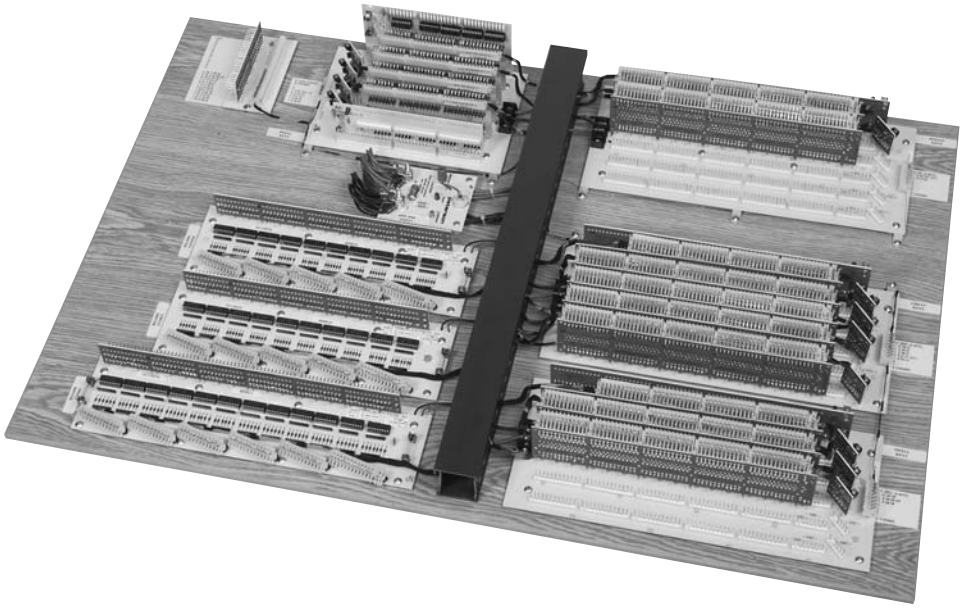
Diode Matrix Switching System

Solid state coupler/relay for pipe organs



- Modular design.
- "Low tech" electronic circuitry.
- Decades of proven reliability in thousands of installations.
- Lowest cost for many applications.
- Specifications easily expanded or changed.
- Provided totally configured, tested and documented.

The Peterson Diode Matrix Solid State Switching System has become a standard in the pipe organ industry, used by hundreds of organ builders in many thousands of organs world wide. Early installations have now been in use for well over thirty years, and although the details have evolved as improvements were made, the innovative yet simple modular design pioneered by Peterson in the 1960s still makes this a favorite for many projects today. The quick response, maintenance-free reliability due in part to its lack of moving parts, and silent operation all contribute to this system's phenomenal success. For many applications, the relatively low technology level of diode matrix means less cost than with multiplexing and computer based systems. This product is credited by many for transforming the way electric action organs are controlled throughout the pipe organ industry.

Each Peterson Diode Matrix Switching System is a custom built electronic panel for performing the key switching and stop control functions of a pipe organ. Designed to work with any wind chest having an electric action, it is equally applicable to electro-pneumatic or all-electric types. Stops can be straight, or any degree of duplexing or unification can be employed.

Diode Matrix Switching Systems consist of a number of modular assemblies of solid state components including transistors, diodes, integrated circuits and resistors on one or more panels designed to mount in or near the organ chamber(s). Specially designed disconnectable junctions allow the various modules to be factory tested and assembled. At the time of installation, the installer simply wires a cable from each chest to a connector provided, which is then plugged onto its related assembly. Similarly, single switch contacts associated with the keys of each playing manual, the pedal board, and from the stop tablets, must be wired to connectors which also plug in as clearly labeled. Other than the above, the Peterson Solid State Switching System is supplied completely wired, tested and documented.

The Peterson Solid State Switching System originated as a modern substitute for mechanical relays that could offer much higher reliability with virtually no maintenance. With solid state, thousands of switch contacts are replaced by semiconductor devices, which can never pit, corrode or require adjustment. All components are sealed against humidity, dust and other environmental factors. Except for one contact per playing key, and one contact per stop control, there are absolutely no contacts to ever require adjusting or cleaning. Because there are no moving parts, there is nothing to stick, bind or make noise. Except for the movement of the stop tablets and the playing keys, the action is totally silent. It is indeed startling to push the Sforzando piston and have the full organ appear without the slightest attendant noise.

Since the solid state switches operate at the speed of light, the action is totally responsive without the lag that is frequently associated with mechanical relays. Because the playing keys must each operate only a single key switch, the loading on the key is insignificant, and the key tension and type of return spring can be selected and adjusted for the best possible "feel."

Key contact reliability and durability is enhanced in that the key switch current is less than that required by even a single chest magnet; in addition, it is non-inductive. This means no contact sparking ... never any pitting or burning. Finally, because there are no action

magnets to constantly consume power, a much smaller and less costly rectifier can be used. The total power consumption is essentially that required to operate the chest magnets.

With the Diode Matrix Switching System, no special power supplies are required, and a regular 12 to 18 Volt organ rectifier may be used. Voltage appearing at the chest magnet is about one volt less than the voltage at the rectifier. As in any organ, the minimum voltage required depends on the characteristics of the chest magnets. Polarity is important and normally the key switch feed must be positive. The standard stop tablet feed is positive, with negative available by special order.

Where couplers are used, a separate solid state coupler system may be mounted in the console or in the organ chamber. When certain features are required, a Peterson OrgaPlex™ coupler system is often used with a Diode Matrix relay. If desired, a conventional console having mechanical couplers can be connected in the usual manner. Where any Peterson Solid State Coupler System is used, each playing key operates a single key contact, which controls all functions.

The modular design of this system, together with its unique proprietary connector system, allows unlimited future additions or changes with no preparations and with no cost penalty. It is also practical to add a Diode Matrix System to control new ranks that are being added to an old organ with an electropneumatic or other existing relay.

Each Peterson Solid State Switching System includes a Sforzando terminal which, when energized, turns on all stops. Any stops not desired in the Sforzando combination may be deleted by clipping a wire or unsoldering a connection. The provision of the Sforzando terminal saves the very considerable cost of special Sforzando switches and wiring that was traditionally required.

The operation of the Diode Matrix relay is remarkably simple. A comprehensive technical manual, which describes in simple terms how the equipment works, is supplied with each system. Even without this resource the modular concept, logical layout of the various components, connectors and built-in test junctions make trouble shooting easier than with most other relays, electronic or otherwise. Consider, for example, the common "cross" or "run" where two or more notes sound together. Usually, the short circuit causing this can be in any of several locations, but with the modular concept, the various assemblies can be quickly disconnected from one another and the trouble immediately localized. Components and connector terminals are mounted on special printed wiring boards in octave groups so that the parts related to a specific function are readily identified. While a complete system necessarily looks complex, a more careful examination shows it to consist of a large number of identical, very simple, easily understood circuits. Any technician who can find his way around a mechanical relay will quickly feel at home with Peterson Solid State.

Each type of Peterson control system has advantages for particular organ specifications. The Peterson Diode Matrix Switching System is often less expensive on small organs with all or most of their ranks straight rather than unified and where features such as a transposer, MIDI interface and/or a movable console are not required. In some cases, Peterson will recommend a "hybrid" control system using OrgaPlex™ couplers connected to a Diode Matrix Switching System to operate the note actions. Peterson's technical staff will be happy to discuss options and pricing with you.

Specifications

Operating Voltage: **12 -18 VDC.**

Key Common Polarity: **Positive.**

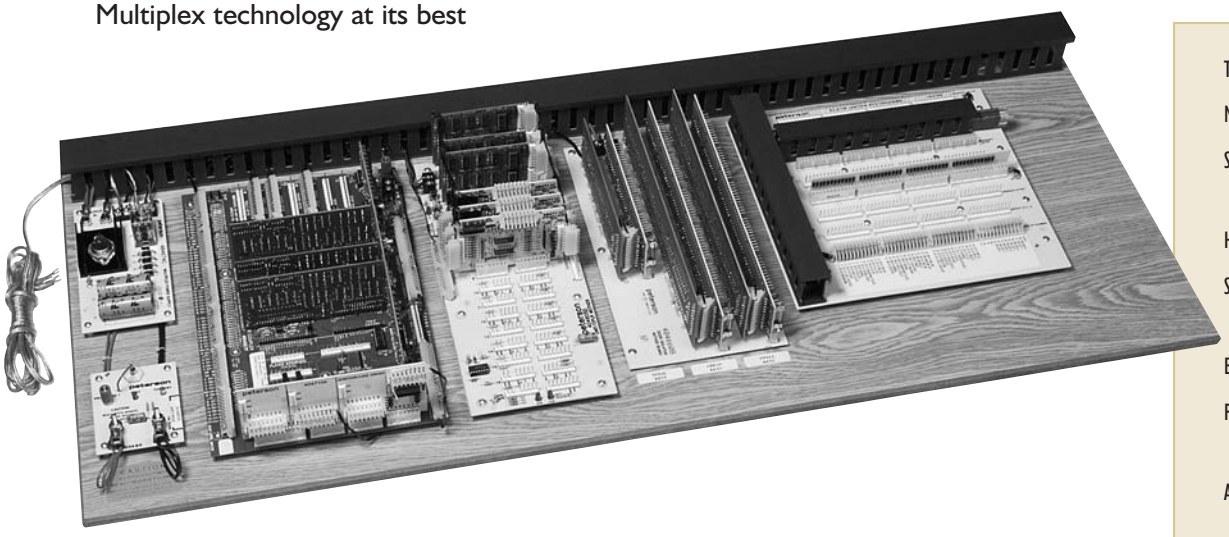
Stop Common Polarity: **Standard is positive; specify negative when ordering if required.**

Chest Return Common Polarity: **Standard is negative; inquire if positive chest returns are required.**

Output Load Ratings: **Please specify the locations and resistance of all magnets below 50 Ohms. Outputs are flyback protected.**

OrgaPlex™ Coupler & Switching System

Multiplex technology at its best



- Time division multiplex technology.
- Modular base system design.
- Small, easily unplugged main cable.
- Highly flexible and expandable.
- Specification easily modified by moving a wire.
- Extensive self-diagnostic features.
- Provided completely assembled, cabled, and documented.
- Accepts pre-made Peterson keyboard or key contact cables.
- Easy interface with MIDI Resource System.™
- Low cost optional transposer.
- Available manual transfer.
- Sostenuto, melody coupler, pizzicato, glissando.

The Peterson OrgaPlex™ is a "Time Division Multiplex" type switching and coupler system for pipe organs. This means that the "on" and "off" status of many related controls, such as all the keys of one keyboard or a large group of stops, are repeatedly scanned at high speed, then processed and transmitted within the system on essentially a single wire. That one wire for each group carries informational data in what is called "serial form", in contrast to "parallel" systems that require separate wires for each note, repeated for each stop, throughout the organ.

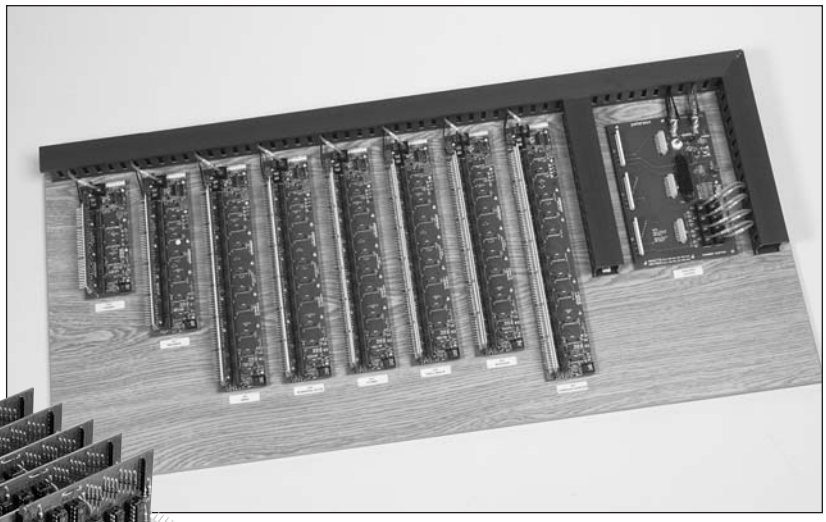
Because one signal carries the status of many contacts, a single circuit can be used to perform functions that would take dozens of circuits in a parallel type system. This means that transposing, inter- and intra-manual coupling, unification, manual transfer, and other manipulations can be handled quite simply- and often more economically than with other types of organ control systems.

In most applications, the streams of serial data representing the coupled, unified and otherwise manipulated information for each division are transmitted via small, shielded, computer industry standard cables to "chamber panels" located near the wind chests. These main cables measure only about 3/4" in diameter and are easily unplugged at each end, making OrgaPlex an excellent choice for situations where a movable console is required. Cables are available in standard lengths from Peterson or local computer supply stores. Runs may be up to several hundred feet in length where necessary.

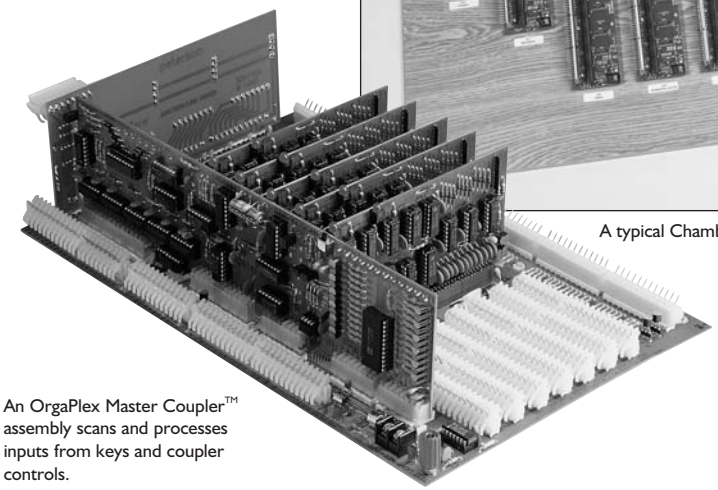
The Peterson OrgaPlex Switching System represents an important milestone in applying modern technology to the organ builder's art. Important because, for the first time, this system brought high tech methods to the organ builder and service person in a way that is totally practical and understandable. Even those who have little or no understanding of electronic systems and perhaps little interest in the electronics field quickly feel comfortable working with this equipment. Today nearly two thousand OrgaPlex systems are in service throughout the world, making it one of the most widely used types of pipe organ switching.

When Peterson engineers began development of a multiplex switching system in 1985, it was considered imperative that the product's design follow a similar, modular philosophy to that of the Peterson Diode Matrix relay and Duo Set™ combination action: a philosophy that still sets Peterson control systems apart today. Specifically, OrgaPlex systems are custom configured at the factory for each organ using several types of small, limited-function circuit boards plugged together into three dimensional assemblies called base systems. Each circuit board module contains readily available components that are widely used throughout the electronics industry. The use of standard components, interchangeability of small modules, and huge number of identical circuit boards produced every year assure that OrgaPlex systems will remain supportable for many decades.

With regard to serviceability, OrgaPlex is nearly self-diagnostic. There are built-in LEDs so one can follow the data stream completely through the system, all the way to the output of the drivers. This allows the organ builder to quickly isolate a problem down to the wiring, key contacts, chest, or a specific module of the OrgaPlex system. The modular design concept itself offers many advantages to the organ builder including



A typical Chamber Panel with Demultiplexer boards and Chamber Junction.



An OrgaPlex Master Coupler™ assembly scans and processes inputs from keys and coupler controls.

OrgaPlex™ main cable.

ease of making changes or additions; a logical, easy to understand layout; and simple troubleshooting and repair by swapping or replacing modules.

Specification details such as the assignment of a pitch to each unit stop, borrowing and unification, and the choice of couplers used may be modified by simply adding or moving one wire. This hard wires the spec so that it is never subject to unintended loss or changes. Any desired changes and additions are easily made on-site by the organ technician with no specialized equipment: it is never necessary to return the system or request replacement chips in order to adjust the specification. Since OrgaPlex uses digital electronics technology but is not a software-driven, microprocessor based system, it represents an attractive blend of technically sophisticated features and hard-wired simplicity.

For performance, features, and well-proven reliability, the Peterson OrgaPlex switching system is hard to beat! A Peterson customer service representative will be happy to help you determine whether this product is best suited to the requirements of your next new organ or rebuild project.

Specifications

Operating Voltage: **Organ rectifier 12-18 VDC. Supplied 9 VAC Class 2 transformer or optional Console AC Control System must be plugged into a 117 VAC 50/60 Hz always-on outlet.**

Keying: **DC Key Encoders require positive key commons through a single contact per note.**

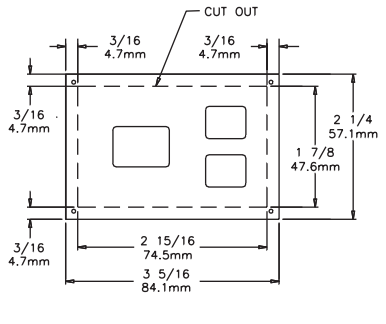
Stop Common Polarity: **Positive.**

Chest Return Common Polarity: **Negative.**

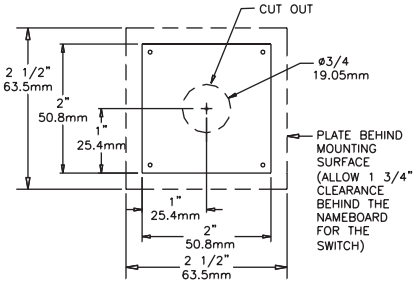
Output Load Rating: **Please specify the location and resistance of all magnets below 50 ohms. Outputs are over-current protected.**

Performance: **One scan every 8.3mS; entire organ is refreshed approximately 120 times per second.**

TECHNICAL INFORMATION



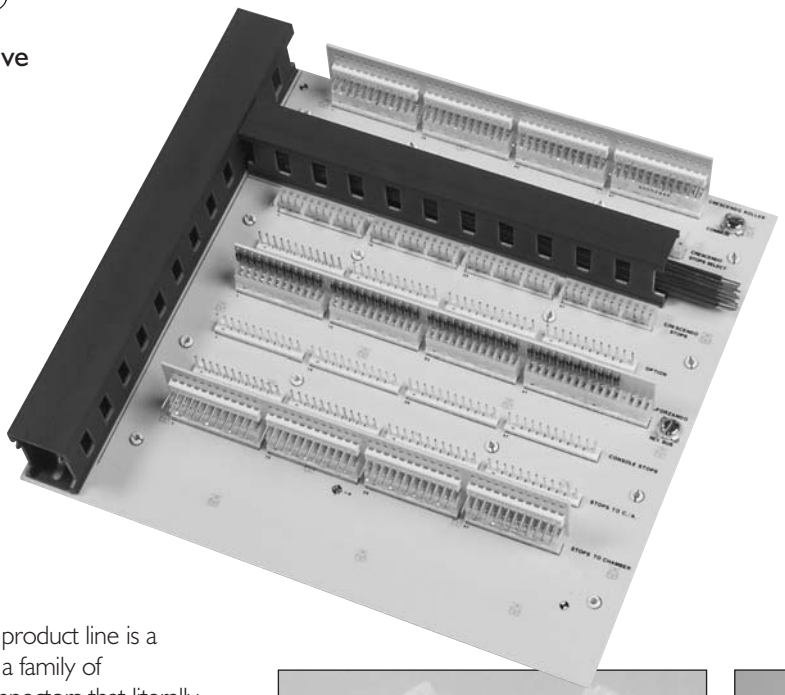
Digital Transposer Select



Rotary Transposer Select

Junctions, Connectors & Wiring Harnesses

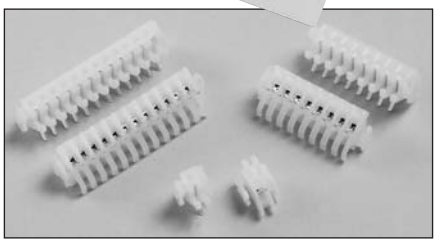
A Peterson exclusive



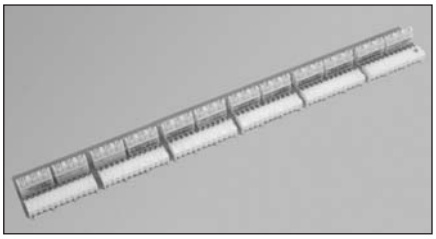
The foundation of Peterson's product line is a proprietary cabling method and a family of disconnectable junctions and connectors that literally revolutionized the manufacture of modern pipe organs. This concept greatly improves the practicality of completely assembling, wiring, testing and trouble-shooting a pipe organ at an organ builder's facility before moving the organ to its installation site.

A highly efficient method of wiring each cable and then soldering several dozen connections simultaneously at the Peterson factory allows organbuilders to skip the once necessary but mundane task of wiring organs in their shop or on location. Compact cables are included with Peterson Master Touch II™ Keyboards, Modular Key Contact Assemblies and Expression Shoes & Contact Assemblies. Custom cables are also available for wiring control systems to pistons, stops and chests: often at a cost lower than making them in your own shop.

Peterson Stop Junction *(shown above)* and Key Junction motherboards are available in various lengths and numbers of rows. Key Junctions accommodate keying cables in from the keyboard and out to the switching system and include extra circuits for pistons and shades. Stop Junctions serve as a common connection point for stop actions, combination action, sforzando, crescendo, and the switching system. All rows are arranged in octave groups of twelve and labeled for clear identification. Other junction boards are custom sized for a variety of applications and are generally included on Peterson control system panels as well as being available separately.



E-Z Wire™ connectors are available in 12, 8 and 1 circuit sizes.



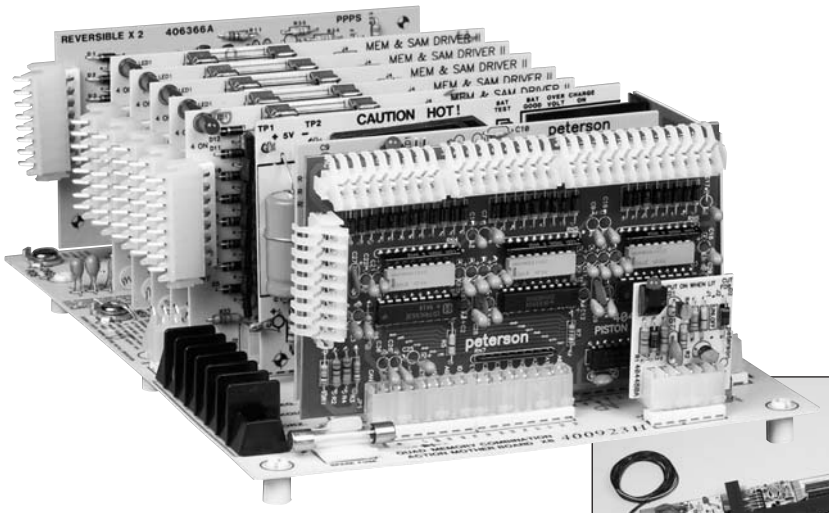
A typical Quick Punch™ connector board.

Three different types of cable-end connectors may be plugged onto junction motherboards. Peterson E-Z Wire™ plastic connectors in 12, 8, and 1-circuit sizes may be snapped together to form longer connector strips for use with all Peterson equipment. E-Z Wire connectors are custom designed and manufactured for Peterson and include provisions for guiding and bundling magnet wire conductors neatly and securely. When PVC insulated conductors such as telephone industry cable is to be used, we recommend our "Output Connectors"; compact circuit boards designed to create a disconnectable cable end. Output Connectors include holes near the top edge for lacing individual wires in a manner similar to traditional organ spreaders and are available in various lengths. Peterson Quick Punch™ unpluggable Insulation Displacement Connector boards are now available for those who prefer the "punch down" method of wiring.

For more information about Peterson's exclusive junction and cabling systems, please contact our customer service department.

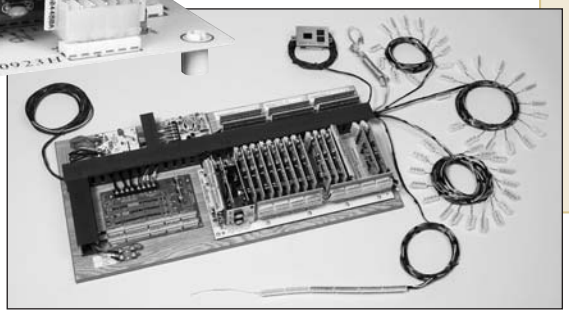
Duo Set™ Solid State Combination Action

Proven in thousands of installations



Digital Memory Select option.

- Up to 32 memory levels.
- Rotary knob or digital memory select.
- "Capture" and "tripper" style setting.
- Full and "off only" reversibles.
- Modular design for flexibility.
- Capacitor memory backup-no batteries.
- Key lockouts to prevent unauthorized resetting.



A typical Duo Set™ combination action shown with available piston and stop action cables.

The Peterson Duo Set™ Combination Action has long been the industry standard for controlling pipe organ stop tabs and drawknobs. Peterson engineers pioneered the use of digital electronic memory chips in pipe organs in the 1970s with the first Duo Set systems, so named for their ability to accept registration settings in the traditional fashions of either "capture" or "tripper" style setters.

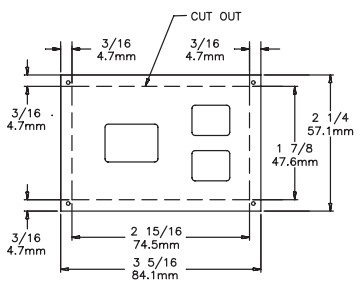
From the very beginning, Duo Set combination actions have featured an innovative "modular base system" design that made it easy for organ builders to understand and work with sophisticated electronic circuitry. Circuit board modules, each serving only a very specific function, plug onto a motherboard to create a compact, three-dimensional array. Modules may be easily swapped for diagnostic purposes and quickly replaced with a spare if ever necessary. The limited function modules serve as building blocks, allowing any Duo Set combination action to be reconfigured or expanded as an organ's specification changes. Optional factory-made custom wiring harnesses are usually ordered to simplify wiring of the combination action to stop controls.

Over time, the original design has evolved, leading to increased capacity for pistons and memory levels, many new operational features, and improved timing precision. Each base system can now accommodate up to 64 stops and 24 pistons on 1,4,8,16, or 32 memory levels. Levels can be adjusted with a rotary knob or a digital memory select assembly with up and down buttons and an LED numeric display. Up to four key switches can be provided to allow organists to prevent unauthorized changing of their registrations on selected memory levels. Crescendo and sforzando lockout circuits are also included to prevent the accidental setting of false registrations when these functions are in use. Sforzando and "regular" reversibles can be accommodated for fully reversing stops and to turn off subordinate stops whenever a fully reversing stop is turned off.

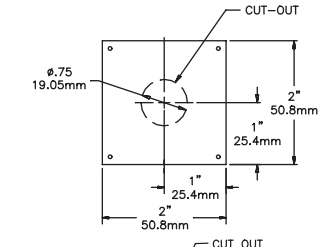
With a successful history spanning over 30 years, it's no wonder that today thousands of organists around the world rely on the precision response and rugged durability of the Duo Set Combination Action by Peterson.

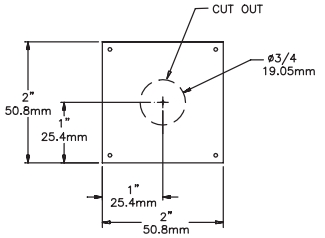
TECHNICAL INFORMATION

Duo Set Digital Memory Select



Memory Lockout





Duo Set Rotary Memory Select

Master Stop Processor MSP-1000™

The ultimate stand-alone combination system

- 99 levels of combination action memory.
- Available direct-access keypad for memory level selection.
- Unlimited stop capacity.
- 60 crescendo shoe positions on each of 4 levels.
- Optional Programmable or "European" piston sequencer.
- "Any piston" next and previous function.
- Manual transfer on tablet or piston.
- Pedal piston couplers.
- "Pedal on any manual" control.
- Blind reversibles.
- Organist assignable reversibles.
- Restore piston.
- Many other specialized features & controls.
- Totally configurable on-site.
- EEPROM memory requires no batteries.
- Extensive built-in diagnostics.

The Master Stop Processor MSP-1000™ raises combination system performance and reliability to new levels while maintaining all of the traditional functions organists have come to expect.

Organists may select from up to 99 independent levels of combination action memory with Up and Down buttons and a digital LED display. The optional direct-access keypad allows jumping to any memory level by simply pressing a numbered button or two.

Four independent crescendo levels can be set and modified at any time when the Mode Select switch is in the "Save" position. Programming a crescendo is as easy as setting a piston and any number of stops or couplers can be added or removed on each of 60 shoe positions. Pressing the Set Latch button allows each shoe position's registration to be automatically set as the shoe position number is advanced. Set to an organist's requirements, the crescendo shoe becomes a valuable asset during any performance.

The Master Stop Processor MSP-1000 can accommodate any number of divisional and general pistons to control an unlimited number of stops in a multitude of divisions. Moving and "blind" reversibles are available for any function as well as "organist assigned" reversibles that provide unprecedented flexibility. Through the use of an "assignable" toe stud or piston, the organist may command any stop, group of stops, or function to reverse, cancel, or turn on as desired.

Holding any piston for more than a second allows stops to be set in the traditional "tripper" *(hold and set)* method, and the use of a Set piston provides the convenience of a capture system; either method can be used according to the organist's preference. A visual indication is provided at the control panel whenever stop position changes may be set into memory.

Any one of the following methods can select sforzandos or tuttis. A separate tutti can be provided for each combination action memory level, or up to four tutti levels can be accessed through their own pistons. An optional Tutti Select Control Panel can allow the four levels controlled by one piston to sound independently or be added *(stacked)* together.

A Restore piston can be invaluable if a piston is accidentally pushed during a performance or when setting combinations. Pushing Restore will promptly return the previous registration even if stop controls had been moved by hand. The Restore piston may also be used to return to memory a combination that was accidentally overwritten.

Placing the Mode Select switch in "Edit" will enable the tabs or knobs to move, indicating crescendo or sforzando memory settings. Through the use of this method, crescendo and sforzando settings can be checked visually, quietly, at any time.

The MSP-1000 provides 8 lockout circuits, which can be assigned the desired combination action, crescendo, and tutti memory levels to prevent unauthorized setting. The memory levels allocated to each circuit can easily be modified at any time by an organ technician.

All circuit boards are engineered, assembled, soldered, and tested by Peterson specialists to exacting standards. Every component used in this superior system has been carefully selected to assure long life under demanding conditions. Before shipping, each Master Stop Processor must undergo multiple quality inspections and pass a rigorous test procedure.

Indicators are provided on each circuit board to provide the organ technician a visual means to determine the system's status at any given moment. Also included are diagnostics able to automatically de-activate a stuck thumb piston, toe stud or other mechanical failure. Since all piston, crescendo and sforzando memories are permanently held until you wish to change them, there is never a concern over memory loss during a power failure and the need for batteries is completely eliminated.

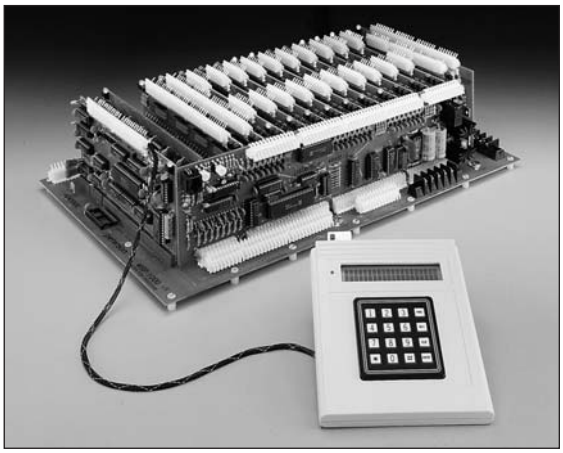
Everyone has his or her own unique idea of the perfect combination system. This is precisely why the MSP-1000 has such a broad selection of features and functions to choose from. With an easy-to-use Set-Up Terminal, and a simple program procedure, an organ builder can control any or all aspects of the system's operation. The Master Stop Processor's modular design and programming flexibility allow future additions or specification changes to be made at any time.

The Peterson MSP-1000's available Piston Sequencer option enhances the performance of this combination system even further. An exclusive feature allows you to select either of two Piston Sequencer formats.

The Programmable Piston Sequencer format allows a series of up to 99 piston presses to be stored in each combination action memory level. By using the Set piston in conjunction with any general, divisional, reversible, or special function piston, with the Piston Sequencer switch in the "on" position, you may enter the desired registration changes into memory. As each piston is entered, or recalled during a performance, the convenient LED readout will display the sequence position and corresponding piston name and number. The most complicated registration changes for accompaniments or extended symphonic works are easily accommodated by entering a predetermined series of piston pushes and then recalling them at the appropriate time during a performance. You may advance or return through the sequence by using the "Next" and "Previous" buttons on the control panel or "Next" and "Previous" pistons or toe studs. In addition, any number of general or divisional pistons can be assigned to serve a "next" or "previous" function when the piston sequencer is on. This can be an important advantage in that these functions can be positioned to offer the greatest convenience. The "Insert" and "Delete" buttons are provided to facilitate modifications to a previously programmed sequence. A piston can be added to or removed from a series easily at any time.

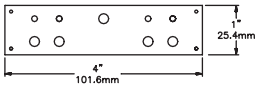
Selecting the European Piston Sequencer format allows one to advance or return through the general pistons by using any "Next" or " Previous" piston. The Master Stop Processor will "remember" the last general piston pressed *(as indicated by the LED readout)* and step up to a higher or down to a lower general piston when an assigned "Next" or "Previous" piston is pushed. To expand the sequence beyond the number of generals available on a particular organ you may choose to include the next higher or lower memory levels as part of the sequence.

An advanced intelligent system, able to fulfill the requirements for varied styles of organ building and performance techniques, the Master Stop Processor MSP-1000 has the powerful technology and traditional design you have come to expect from Peterson, the world's leading supplier of solid state systems for the pipe organ.

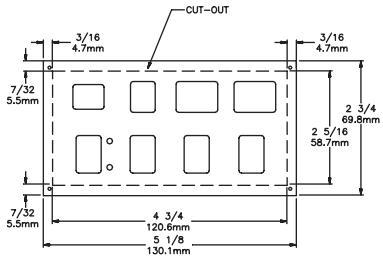


A typical MSP-1000™ with included Set-up Terminal.

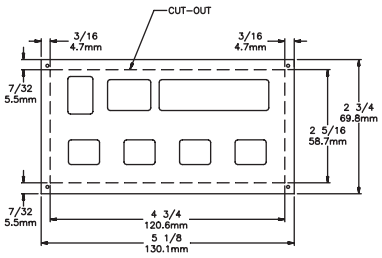
TECHNICAL INFORMATION



MSP tutti Select Panel

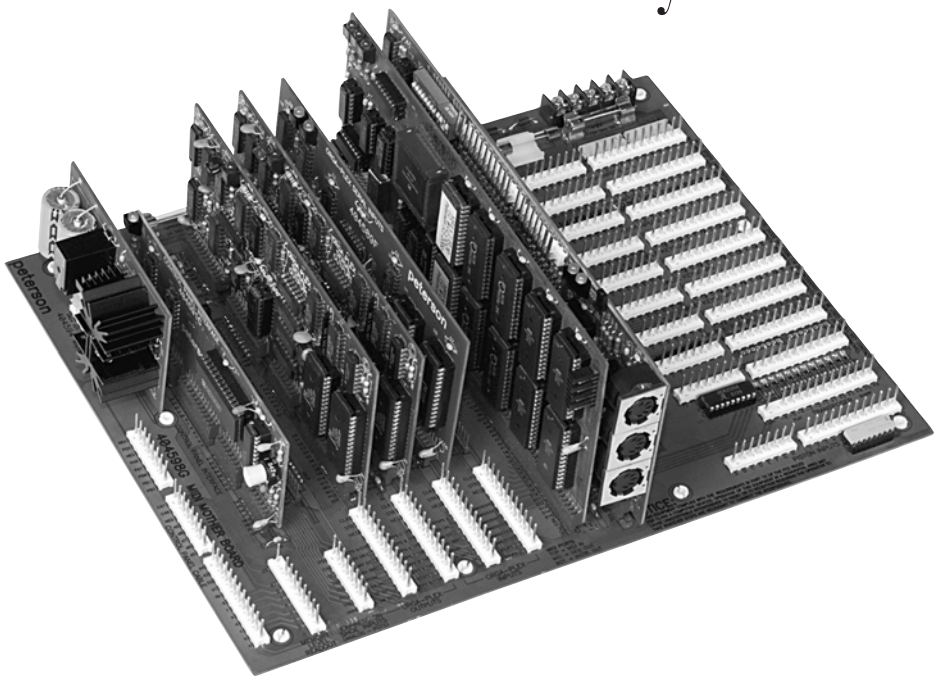


MSP Main Control Panel



MSP Piston Sequencer Panel

MIDI Resource System™



- Compatible with virtually all pipe organs with electric key and stop action.
- Highly intuitive for organists to use.
- Control panel puts main functions at an organist's fingertips.
- Send commands to sound modules from pistons or stops and the control panel.
- MIDI couplers are supported for each division.
- Proprietary "stop mapping" for compatibility of recordings with other organs is available.
- Sound module volume or velocity can be controlled from organ's expression shoes.
- Sustain or sostenuto function is supported for sound modules that respond to these messages.
- Extensive built-in self-diagnostics are provided.
- Traditional Peterson modular base system design.

The Peterson MIDI Resource System™ brings the advantages of "Musical Instrument Digital Interface" technology to organists in a most intuitive way. This versatile interface system may be configured to allow organists to record and play back performances, operate sound modules via standard organ console controls, and even interact with commonly available music editing and transcribing software. The MIDI Resource System is compatible with nearly all pipe organs that have electric key and stop action.

In its most basic form, the MIDI Resource System can be provided as an "out only" system to send digital messages to MIDI compatible devices such as sound modules. When configured as a "record/playback only" system, status change information about all keys, stops, expression contacts, and miscellaneous controls can be recorded onto a floppy disk via a MIDI sequencer. The recorded data files may then be selected by song name and used to play the organ exactly the way it was recorded. This makes it possible for an organist to review and evaluate the performance from various vantage points in the room, and is also useful for pre-recording music for such events as wedding rehearsals or choir practices so that the organist need not actually be present.

A proprietary stop encoding protocol developed by Peterson makes it possible to use disks recorded on one organ to appropriately register other MIDI Resource System equipped instruments, even though the stop lists will almost certainly be different. By using any of several MIDI software programs on a personal computer, the recorded files can be edited to correct mistakes, quantize notes to various degrees to smooth out any rhythm irregularities, or manually add notes. The music can then be printed on an organ-standard three staff score. A DOS based program developed by Peterson may be used to insert, edit, or delete organ stop registrations and expression values.

A MIDI Resource System configured for "full in and out" allows record/playback functionality and also provides a wide selection of features for conveniently controlling sound modules from the console. While other MIDI interface systems for pipe organs allow an organist to send instructions to remote sound modules, the Peterson MIDI Resource System offers unprecedented flexibility in how this is accomplished.

Digital codes called "patch changes", used to command sound modules to play desired voices in response to notes played on a particular channel *(or keyboard)*, can be stored in memory. Patch changes may then be sent via traditional thumb or toe pistons, stop controls or buttons on the MIDI Control Panel.

Separate patches may be saved to pistons on each of 32 or 99 memory levels, which may be selected independently or linked to the memory levels of a Peterson Duo-Set™ or MSP-1000™ combination action. MIDI General pistons can each send as many as 16 separate patch changes virtually at once, through a process called "layering". Layered patches allow controlling multiple voices on the same or different keyboards and may include "Bank Select" messages to access more than the normal 128 voices. MIDI Divisional pistons can each send two patches in quick succession. MIDI pistons are programmed by simple procedures just like the capture or tripper methods of setting a combination action. Pistons then operate in an intuitive and "organ-like" manner.

As an alternative to MIDI pistons, patch changes may be sent from traditional stop controls, usually engraved

"MIDI On..." a division name or "MIDI A", "MIDI B", etc. and located within each division's stop group.

MIDI coupler tabs or drawknobs are also supported. Special coupler controls for each division, usually engraved "MIDI To..." the division name, allow quick enabling or silencing of the sound module voices played from each individual keyboard. Unison, Sub, and Super MIDI couplers may be utilized.

The MIDI Resource System's control panel allows selection and display of the MIDI channel and program numbers that are to be assigned to each keyboard. A patch change channel and program combination may be sent directly from the control panel, or saved on a piston or stop control for convenient use later. The control panel also includes an All Notes Off ("ANO") button to instantly cancel all notes on all connected sound modules without changing any other settings; an On/Off switch for the MIDI Interface in its entirety; and a tuning knob for adjusting the pitch of any sound modules that are compatible with remote tuning instructions.

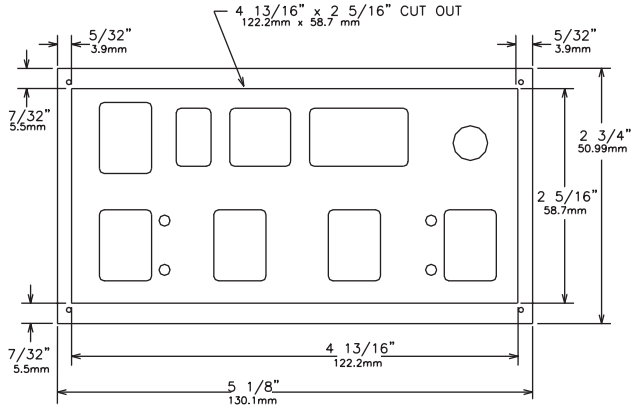
Expression shoes on a console may be configured to control the volume or velocity of sound module voices in various divisions. Sustain or sostenuto function is supported, as are alternate program number banks now found on many MIDI sound modules.

Each MIDI Resource System is provided to the organ builder with the circuit board modules required for the capacity and options specified. There is no job-by-job factory software programming involved; the operating software is standard and identical for all systems except as backwards-compatible improvements are made. Special "Diagnostics" and "Assign Stops" menus allow an installer to configure and test all functions by following step-by-step instructions and viewing displays on the main control panel. A comprehensive array of color-coded diagnostic LEDs monitor the operation of the circuitry.

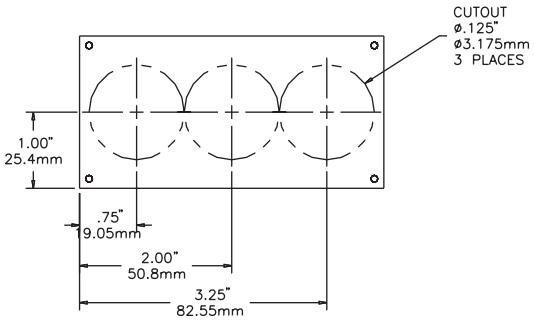
Using a MIDI Resource System in conjunction with a Peterson OrgaPlex™ switching and coupler system is preferred but not required. Note, stop, expression, and miscellaneous control data that is already in OrgaPlex serial form can be translated to and from the MIDI system with the least hardware required, but encoder boards are available at a modest additional cost when installing MIDI on a non-OrgaPlex-equipped instrument. All contacts must be fed from organ positive polarity. Flyback spike protection, standard on the coil drivers of virtually all solid state pipe organ control systems, must be provided for all coils. In certain cases, such as where some coils in the organ are still operated by non solid state relays, discrete diodes must be added either directly across the coils or on circuit boards available from Peterson that may be plugged onto Peterson junctions.

Versatile, full-featured, and easy to use, the MIDI Resource System by Peterson is truly a useful addition to new and rebuilt pipe organs alike.

TECHNICAL INFORMATION



MIDI Main Control Panel



MIDI Connector Panel with Brass Bezel

Specifications

Operating Voltage: Organ rectifier 12 -18 VDC. Supplied Class 2 transformer or optional Peterson Console AC Control System must be plugged into a 117 VAC 50/60 Hz always-on outlet.

Organ Data: Preferred connection is via OrgaPlex™ serial data lines. Alternate methods using DC Encoder boards require positive keying and positive stop common.

MIDI Data: MIDI-standard 5 pin DIN connectors are provided.

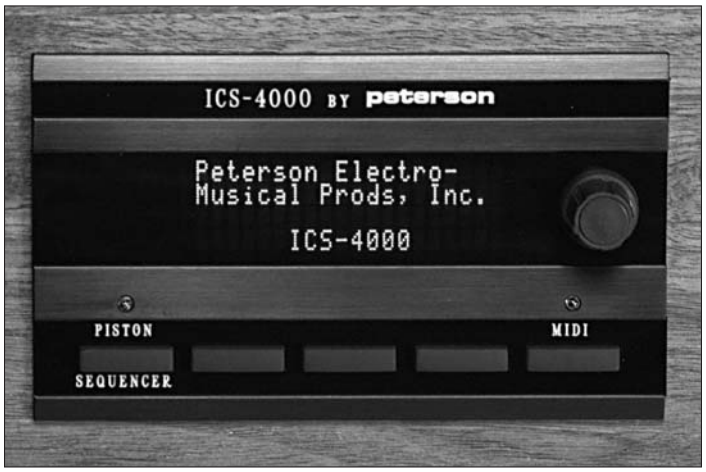
Capacities: Up to 5 keyboards using parallel format or 7 keyboards in OrgaPlex serial format are supported, plus 288 Stops and 72 pistons.

Transposer: Can interface with OrgaPlex or Diode Matrix switching systems.

Inputs: Lock Out, Set, Cancel, Start, Stop, Continue, All Stops Off, Auto Resend, and Sustain (Sostenuto).

ICS-4000™ Integrated Control System

For all of a pipe organ's switching, combination action, and MIDI control requirements



- Extraordinary compliment of switching, MIDI, & C/A related features.
- Hardware and software provided fully configured to organ builder specs.
- Configuration changes easily made on site.
- Factory support via the Internet- no custom chips to wait for.
- Intuitive, consistent control panel menus with full sentence instructions.
- Exclusive "Organist Folder™" organization of memory level settings.
- Simple record/playback to internal memory; no disks or other media required.
- Optionally save song files & combination action registrations to floppy disks.
- Unprecedented Piston Sequencer use and editing features.
- Extremely fast and error-free data handling via Ethernet protocol.

The Peterson ICS-4000™ combines an unprecedented number of available coupling, unification, combination action, and MIDI functions into a single software-driven system that may be customized for virtually any pipe organ application. Never before has such a powerful yet easy-to-use control system been available to pipe organ builders and rebuilders.

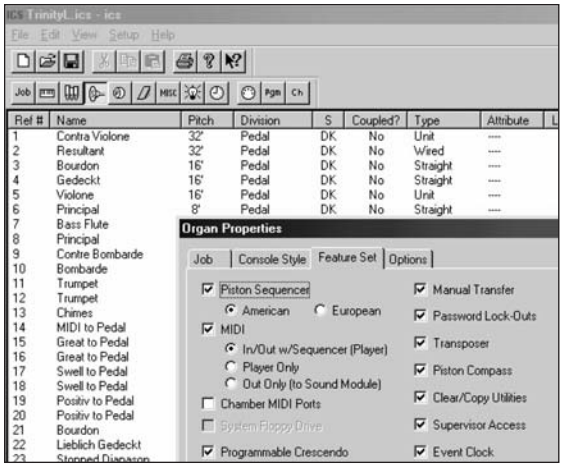
Several important advantages set the ICS-4000 apart from other software-based pipe organ controllers. While typically supplied pre-configured to your specification from the factory, Peterson's innovative system can be altered on-site to meet changing requirements. This is usually accomplished by loading a new software file, which may be sent to the organ shop or church via the Internet, using the available ICS-4000 Floppy Disk Drive. Advanced users may enter their own specification changes with the custom Windows® program developed by Peterson for the ICS-4000. It is also possible for diagnostic procedures and updates of the operating system software to be handled over the "net" if desired.

Inevitably, making additions often requires wiring in more inputs and outputs, such as stop controls and new note actions. With the Peterson ICS-4000, new connections may be made to any unused junction pins on an input or output board, as appropriate. All connections can then be neatly labeled for their function by printing out a wiring list that is automatically generated by the ICS-4000.

Those familiar with the modular circuit design philosophy pioneered by Peterson decades ago will find this same concept carried forward into the ICS-4000. Limited function circuit board modules are designed to plug into high-density connectors inside metal cages. A single "Main CPU" cage, mounted in the console, contains the circuitry related to the system's main microprocessor and serves as a connection point for various components.

"Satellite" cages contain one Microcontroller board and any combination of three other types of circuit boards called Input boards, Output boards, and Stop Action Controller boards. All input and output pins are compatible with Peterson's E-Z Wire™ Connectors, Output Connector boards, and new Quick Punch™ unpluggable punch-down connector boards. Satellite cages in the quantities required are provided for the console and the chamber(s). Connections between Satellite cages and "hubs" are made via very small and commonly available "Cat 5" cables. In most applications a single "Cat 5" cable carries all data between the console and chamber hubs. When separate organ rectifiers are utilized for the console and chambers, no voltage-referencing feed or return conductors are needed.

The Peterson ICS-4000 processes an organist's every command with remarkable speed and reliability. State-of-the-art microcontroller circuits gather and organize information about groups of stop, key, expression, and miscellaneous inputs associated with each Satellite cage. This data is then sent to the main microprocessor in the Main CPU cage using a computer-industry-standard communication system called "Ethernet", which is utilized in millions of computer networks worldwide. The Ethernet communication protocol was developed to send massive amounts of data at high speeds over long distances, automatically ensuring that all the information

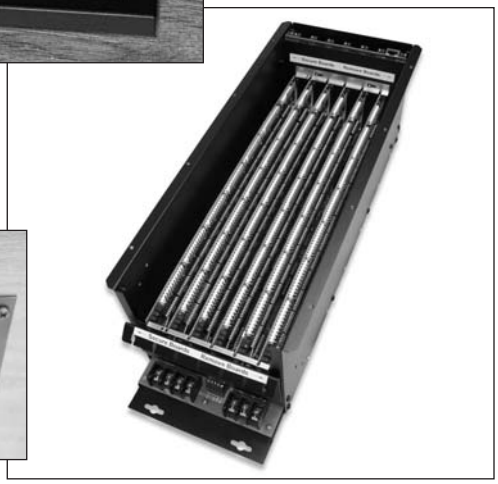


A custom Windows® program is used to edit the organ's configuration.

A typical screen is displayed on the attractive Control Display Unit (CDU).

Bar graphs are available for crescendo and expression.

MIDI cable connectors can be mounted in a convenient location.



"Satellite" cages may contain Input, Output and Stop Action Controller boards.

is received accurately. The embedded "real time" operating system in the ICS-4000's main microprocessor determines and prioritizes what must happen with all system outputs and the microcontrollers associated with output boards are "notified" so they can coordinate the activity of the output boards accordingly. This method of "distributed processing" using a master microprocessor and local microcontrollers contributes to the superb performance of the ICS-4000 for even the largest pipe organs.

All components used in the ICS-4000 are of the highest quality, selected to far exceed the demands of a pipe organ environment. Much attention has been given to selecting parts that are very widely used throughout the electronics industry to assure long-term availability. Numerous self-diagnostic features, an integral fault reporting system, self-resetting fuses, self-protecting driver chips, and provisions for limited Internet-based diagnostic procedures are included.

While nearly any imaginable feature may be accommodated by this product, organists will find the elegant "Control Display Unit" (CDU) with its four line, high visibility vacuum florescent display simple and intuitive to use. The status of all essential functions can be viewed at a glance from the main "run" screen while playing. Three dynamically labeled buttons and a rotary knob give direct, easy access to most functions. Two additional buttons are used for immediate enabling of MIDI and Piston Sequencer controls. The matching 3-1/2" floppy drive control panel may be installed in the console for downloading and uploading MIDI files; saving combination action, crescendo, tutti, and piston sequencer registrations; and making any desired software updates.

An intuitive menu, with instructions generally spelled out in complete sentences, guides an organist through all operations beyond those available on traditional organ controls. Step-by-step on-screen guidance is provided for such procedures as setting up a crescendo or tutti, programming and editing a piston sequence, and operating the optional built-in record/playback system. The ICS-4000's MIDI-based performance recording feature requires no external sequencer and no media such as floppy disks or memory cards, but allows saving files to floppy disks when desired.

Peterson's exclusive "Organist Folder™" format allows each organist to group their assigned memory levels and all other personal settings under the heading of their own name, then password-protect the entire folder against unauthorized resetting by others. Memory levels within each organist folder are numbered from #1. Piston registrations, piston sequences, and other settings can be easily copied to other levels or folders as well as saved to floppy disks.

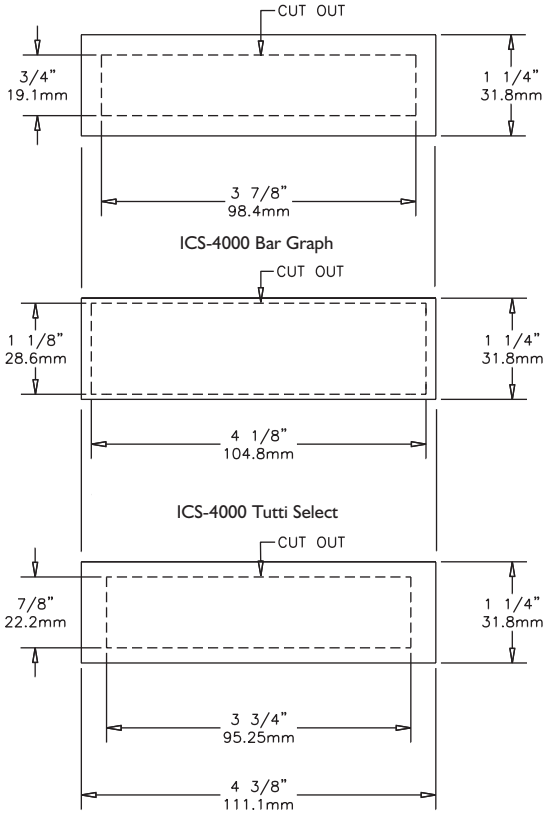
With its remarkable performance, software-based versatility and almost limitless feature set, the ICS-4000 Integrated Control System may be just the right Peterson product for your next project. Please contact one of our customer service representatives to discuss your requirements.

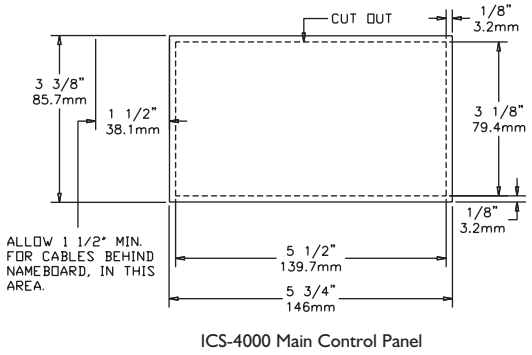
We invite you to visit www.ICS4000.com for more information including a list of available features and an online demonstration of the ICS-4000's on-screen menus.

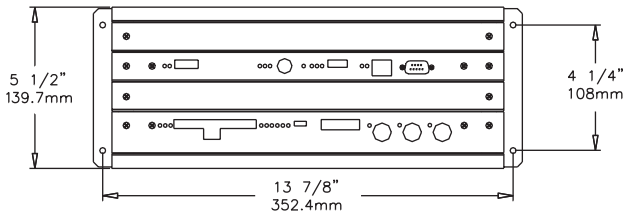
Windows® is a registered trademark of Microsoft Corp.

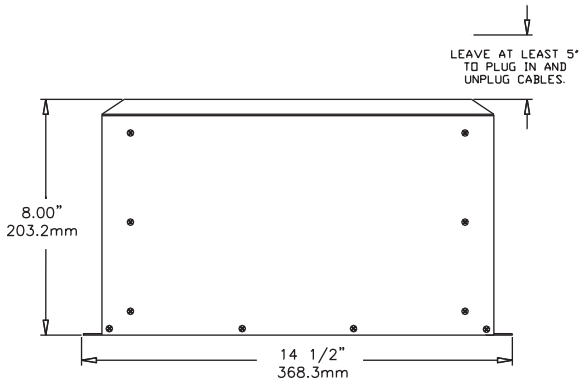
ICS-4000™ Integrated Control System

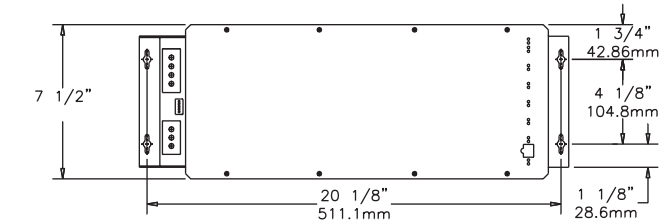
TECHNICAL INFORMATION

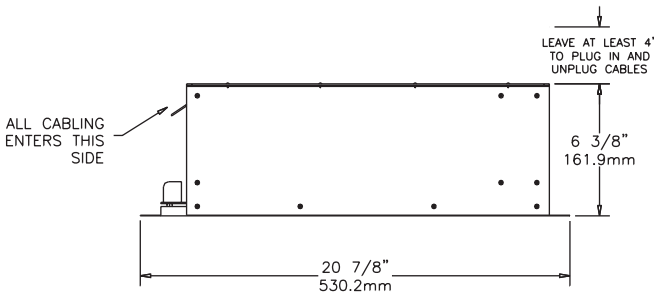


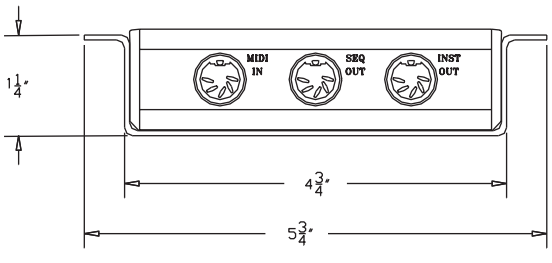


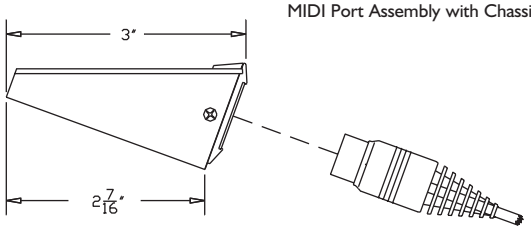












Keyboards, Stops, Expression & Tremolo

Master Touch II™ Keyboards Page 16

Modular Key Contact Assembly Page 17

Pedal Key Contact System Page 18

RC-150™ Electronic Swell Shade Operator Page 19

Expression and Crescendo Page 20

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PowerKnob™ Page 23

Z-Bracket™ Rocker Tablet Assembly Page 24

T-Rail™ Tongue Tablet Assembly Page 25

Dynatrem™ Page 26

Master Touch II™ Keyboards

Quality feel, attractive appearance, stable construction

- Precise tactile feel and quality appearance.
- Metal hinges and key levers for unmatched stability, freedom from twisting and warping.
- Contacts are unaffected by atmospheric pollutants.
- Toggle and speak points never need adjustment.
- Cables for keys and optional pistons are included.
- Angle and height meet AGO specifications.
- Available with beautifully crafted cheeks and slips, finished or unfinished.

Master Touch II™ keyboards for pipe organs combine precise, high quality tactile feel with the promise of unmatched stability through years of temperature and humidity cycles. These successors to Peterson's original Master Touch™ line carry on the tradition of beauty and durability that is recognized by dozens of organbuilders in many hundreds of pipe organ consoles.

Long-life carbon contacts are unaffected by airborne pollutants and never need speak point adjustment. While cleaning of the contacts will probably never be required under normal circumstances, it's reassuring to know that the contact actuators can easily be cleaned or replaced if ever necessary. Keys can be removed individually in just seconds for replacement in the event of surface damage.

Master Touch II keyboards are available with one-, two- or three- manual cheek and slip assemblies crafted from walnut, oak, mahogany, cherry, or poplar and can be inlayed or custom-styled to order. Cheeks may be ordered unfinished, or finished with either a standard clear coat or custom-matched stain or paint to your specifications. Slips, when ordered finished, are optionally available with pistons and piston cabling ready to plug into any Peterson control system. Unfinished slips can be provided with holes custom drilled for pistons and with loose pistons and piston cables.

Natural keys are white in color, while sharps are black with an attractive, subtle texture. A light, pre-calibrated toggle is included on all Master Touch II keyboards. Keying cables are provided with each manual at no extra charge.

Specifications

Contact Current: Transistor buffered; minimum rated resistance 50 Ohms @ 18 VDC.

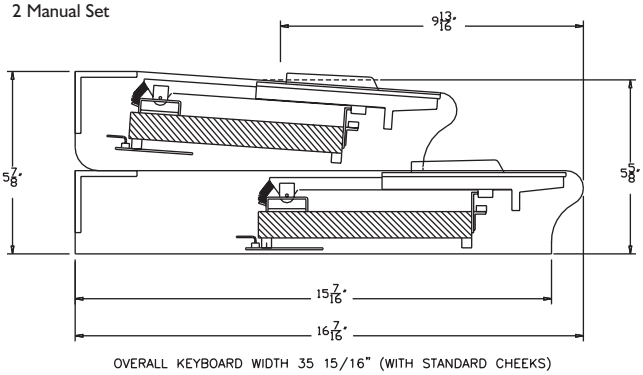
Operating Voltage: 10-18 Volts DC (24 Volt version also available).

Diode Suppression: Integral diodes included.

Scan Delay: 0.000133 sec (133 micro second) typical.

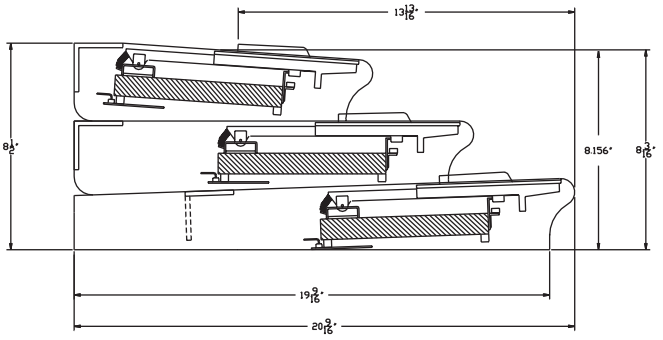
TECHNICAL INFORMATION

2 Manual Set



OVERALL KEYBOARD WIDTH 35 15/16" (WITH STANDARD CHEEKS)

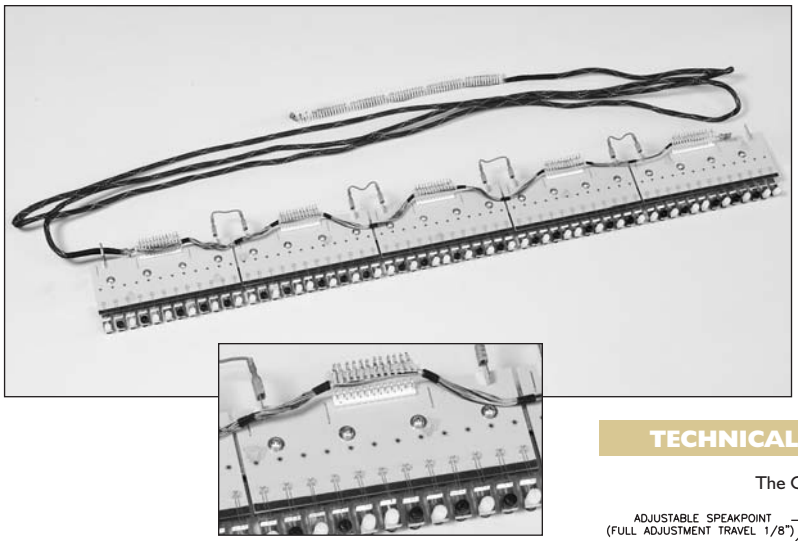
3 Manual Set



OVERALL KEYBOARD WIDTH 35 15/16" (WITH STANDARD CHEEKS)

Modular Key Contact Assembly

Eliminates mounting and wiring individual contacts



The Peterson Modular Key Contact Assembly is perfect for installing or replacing contacts on wooden keyboards. This innovative design incorporates traditional sterling silver wires and phosphor bronze plates *(optionally silver tipped)*, as have been used in organs for over a century.

Now both the silver wires and phosphor bronze plates are combined into one 61-note assembly, complete with speak-point adjusting screws. This eliminates all the handwork of mounting individual contact blocks and shorting plates for each key.

The 61 note key contact assemblies are made of printed wiring boards (PWBs) mounted on an aluminum rail. Configurations are available for mounting above the tails of center hinged keys and below the centers of rear hinged keys. Like most Peterson products, the PWBs are supplied with plug-in connectors. Available at no extra cost is a cable that simply plugs onto a Peterson junction board.

The entire 61 note key contact assembly mounts with only a few screws. It comes pre-adjusted so that mounting and a slight touch up of the speak-point of individual keys is all that should be required for perfect operation.

Specifications

Contact Current: 250 mA= 60 Ohm load @ 15 VDC.

Diode Suppression: Recommended for inductive loads.

Contact Resistance: Less than 200 milliohms with connectors.

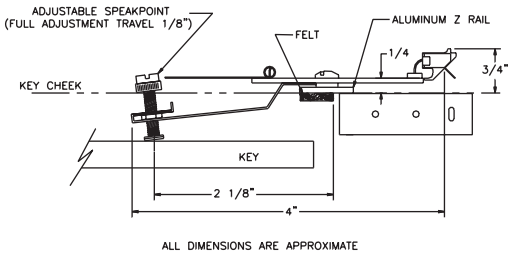
Capacitive Load: 1 MFd maximum.

Temperature Range: -20 degrees C to 65 degrees C (-4 degrees F to 149 degrees F).

Life Expectancy: Tested 12 million cycles at rated load with no significant wear detected.

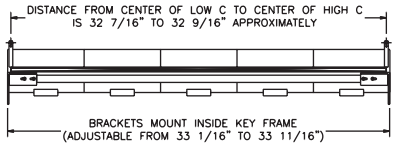
TECHNICAL INFORMATION

The Over Key Contact Rail



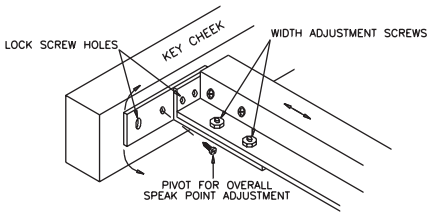
ALL DIMENSIONS ARE APPROXIMATE

61 Note Keyswitch

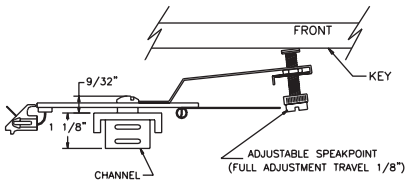

DISTANCE FROM CENTER OF LOW C TO CENTER OF HIGH C
IS 32 7/16" TO 32 9/16" APPROXIMATELY
BRACKETS MOUNT INSIDE KEY FRAME
(ADJUSTABLE FROM 33 1/16" TO 33 11/16")

Over Key Style Mounting Detail

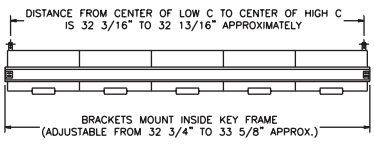
(SHOWN HERE WITHOUT 12 NOTE CONTACT BOARDS FOR CLARITY)



The Under Key Contact Rail



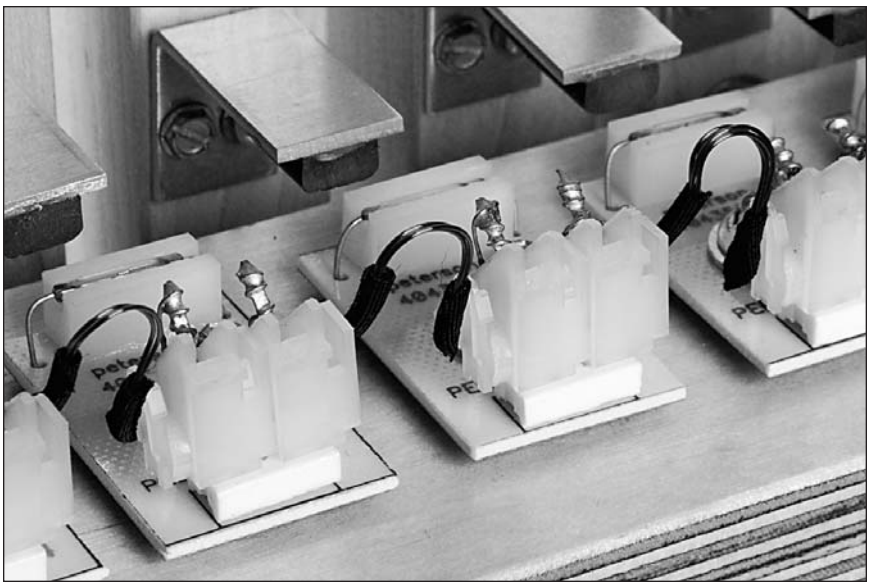
61 Note Keyswitch Assembly


DISTANCE FROM CENTER OF LOW C TO CENTER OF HIGH C
IS 32 3/16" TO 32 13/16" APPROXIMATELY
BRACKETS MOUNT INSIDE KEY FRAME
(ADJUSTABLE FROM 32 3/4" TO 33 5/8" APPROX.)

- Modular, one piece, pre-wired design.
- Designed for optimal "wipe" & contact pressure.
- Entire 61-note assembly mounts with only a few screws.
- White natural and black sharp adjustment screws for precise setting of speak point.
- Totally silent operation.
- Tested to simulate over 100 years of average use, with negligible wear.
- Redundant silver wire contacts and phosphor bronze "chopper" plate assure unprecedented contact reliability.
- Over-key & under-key mounting configurations available.

Pedal Key Contact System

Reed switches for reliability in a harsh environment



Peterson's improved Reed Switch Pedal Key Contact System now features a small, separate circuit board for each note. This allows the contact system to be installed either near the toe end of each pedal key, or on a cross member that may be fabricated under the center of the keys.

The permanent magnet for each note is supplied bonded to an aluminum bracket, which is designed to be screwed to the bottom of a key. A locating tool is provided to quickly spot the correct pilot hole locations for the screws to mount both the circuit board and the magnet bracket.

To simplify the precise speak point adjustment, a color coded LED for each note is provided so the installer can visually monitor the states of the contacts while each circuit board is slightly repositioned as required before tightening it down. A cable to connect each individual circuit board with a supplied junction is also included.

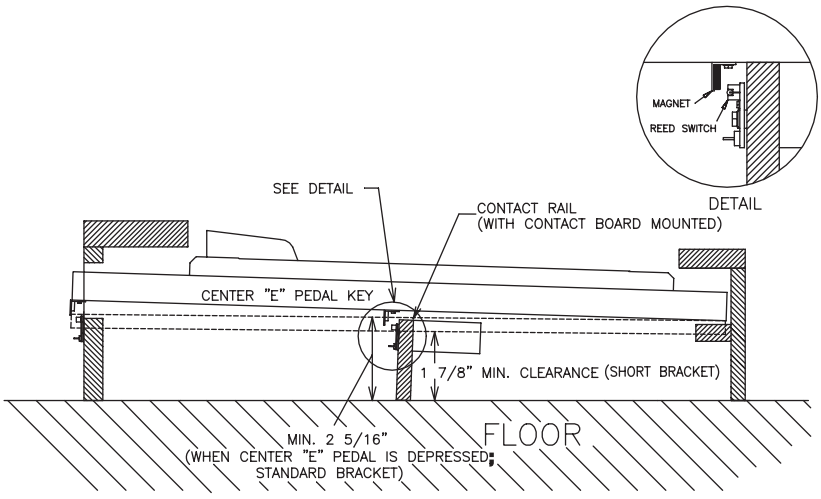
This contact system is compatible with virtually any pipe organ pedalboard as long as adequate clearance is available under the keys. Please refer to the drawing to the right for the minimum dimensions required between the bottom of a fully depressed key and the floor. When ordering, standard "long" permanent magnet brackets should be specified unless limited clearance requires the use of short brackets for the keys nearest the center of the pedalboard.

Specifications

Individual reed switch circuit boards for each pedal key may be mounted in various positions. Cable, junction, permanent magnet brackets and all required mounting hardware are included.

Reed switch contact current rating is 500mA max. Inductive loads require diode suppression.

TECHNICAL INFORMATION



RC-150™ Electronic Swell Shade Operator

Smooth, quiet, and powerful

- Microprocessor control of speeds and positions for superior performance.
- Simple set-up...precisely match operation to your installation.
- Wider speed range and more powerful than earlier models.
- Full control over acceleration and deceleration for smooth motion profiling.
- Eight and sixteen stage models available.
- Automatically closes or opens shades when organ is turned off if desired.
- Gear motor durability proven in over 5000 installations.
- Quiet operation; no mechanical relays.
- Selector for 115 or 230 Volt operation.

The Model RC-150™ Swell Shade Operator represents another important step in Peterson's continuing application of modern technology to pipe organ building in ways that truly make sense.

The RC-150's microprocessor-based motion control system automatically compensates for various load conditions to smoothly accelerate and decelerate the shades. Beginning with standard factory settings, the organ builder may match the RC-150's shade position and speed parameters to the individual characteristics of a particular swell shade system by pushing buttons in response to clearly worded instructions on an LCD message screen. A number between 0 and 100 represents the amount that the shades will open at each shoe position. The speed for each increment of open and closed direction travel is represented by the words Slow, Medium, or Fast.

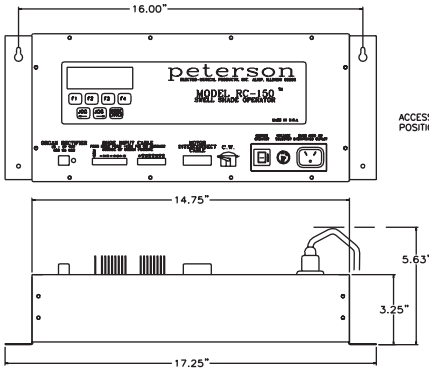
If desired, speed, acceleration, and deceleration performance may be "fine tuned" to your exact requirements by following additional simple instructions. After experimenting with any of these settings, you may return to the original factory configuration instantly at any time.

Several features that had been suggested by users of the earlier Model RC-100 have been incorporated into the design of the RC-150. These include the availability of sixteen shoe position stages; provisions for using contacts which make to close rather than open the shades; a dual-primary transformer and voltage selector switch for 115 or 230 Volt AC operation; accommodations for use with 12 to 18 Volt or 24 Volt DC systems; and silent relay-free direction control. A built-in shoe test feature lets you verify whether all shoe contacts are "seen" by the RC-150. Selection of clockwise- or counterclockwise-to-open motor direction has been simplified and no longer requires moving of wires.

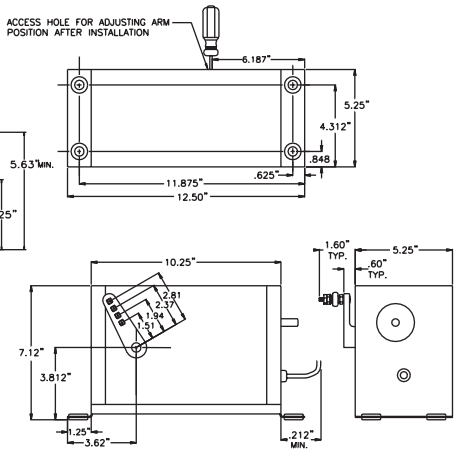
The RC-150's Motor Module consists of the same gear motor and precision motion sensing potentiometer that are well known from earlier models and proven in thousands of installations, yet the new motor drive circuitry offers a significant increase in power and a wider range of speeds. An automatic power monitor will discontinue current to the gear motor after a predetermined time if a problem with the shade system causes the motor to stall. The shades may be set to open, close, or remain in the position determined by the expression shoe when the organ power is turned off.

TECHNICAL INFORMATION

RC-150 Control Module Dimensions

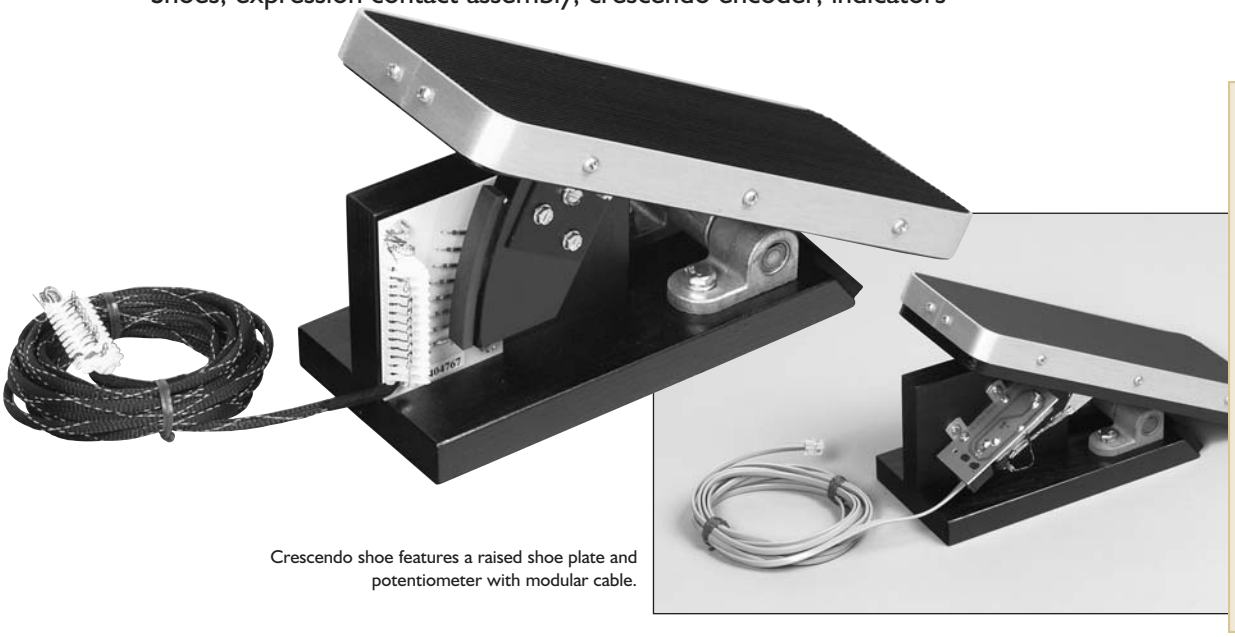


RC-150 Motor Module Dimensions



Expression and Crescendo

Shoes, expression contact assembly, crescendo encoder, indicators



Crescendo shoe features a raised shoe plate and potentiometer with modular cable.

- Durable, silent pivot.
- Easily adjustable resistance to motion.
- Reed switch expression contacts: 8 or 16.
- Long life precision crescendo potentiometer.
- Attractive brushed aluminum trim.

Peterson offers a full line of expression and crescendo shoes, expression shoe contacts, crescendo shoe encoders, lighted bar graph indicators, and round LED indicators.

All Peterson shoe assemblies are designed to provide a firm and even resistance for ultimate control and long lasting durability. Sturdily constructed to AGO specifications, these shoes need no seasonal adjustment or lubrication. The pivot mechanism is centered around a 1/2" diameter solid steel shaft in oil-impregnated bronze bearings for smooth, quiet motion. The tension may be set to your individual liking with a simple adjustment. Ribbed footpads are provided in both brown and black with a distinctive brushed aluminum edge trim that adds a touch of class.

Peterson Expression Shoe Assemblies utilize magnetically operated, hermetically sealed reed switches to provide flawless contact performance in any environment. Shoes are available in eight- and sixteen-stage versions and include a cable designed to plug onto standard Peterson junctions. Each contact is rated at 500 mA, non-inductive or diode suppressed.

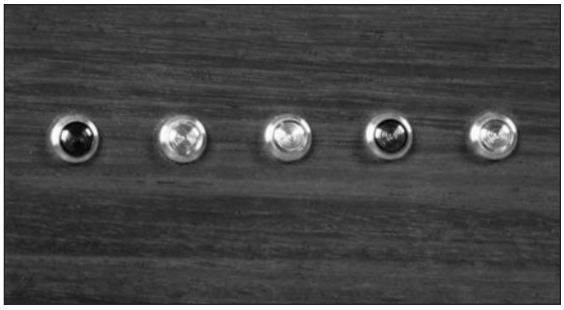
Crescendo Shoe Assemblies are specifically designed for use with the MSP-1000,™ ICS-4000™ or Jumper Wire Crescendo Setter systems. A high precision, long life potentiometer is used in place of vulnerable roller contacts. A modular style cable is provided to plug directly into the Peterson crescendo system of your choice. The shoe plate is raised slightly relative to that of our expression shoes in traditional fashion.

For rebuild projects where it is desirable to retain the appearance of original shoes, reed switch expression contact assemblies and a potentiometer-based crescendo shoe encoder assembly are available. These assemblies are designed to mount to most existing shoes and are smaller and more convenient to install than most rollers. Our expression contact system was completely redesigned in 2002 and is now more compact and much easier to install and adjust to match the travel of any shoe. Expression contact systems are now offered in both eight-and sixteen-stage models.

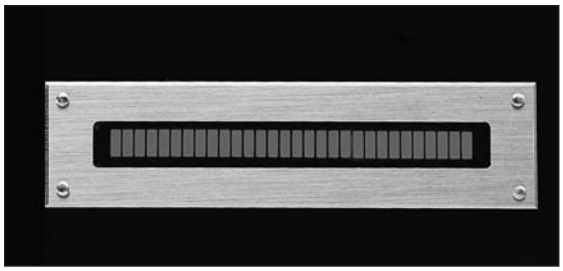
For an attractive and useful visual indication of each shoe's position, we recommend using our LED Bar Graph Assembly. Available with red, green, or yellow LED segments, each bar graph may be used to indicate the position of one crescendo shoe or up to three expression shoes.

Bezel choices include brushed solid brass, light ivory colored plastic, or a black anodized extruded aluminum style that coordinates well with ICS-4000 control panels. Individual round LED indicators in brass bezels are also available for a simple indication of whether a crescendo shoe is advanced.

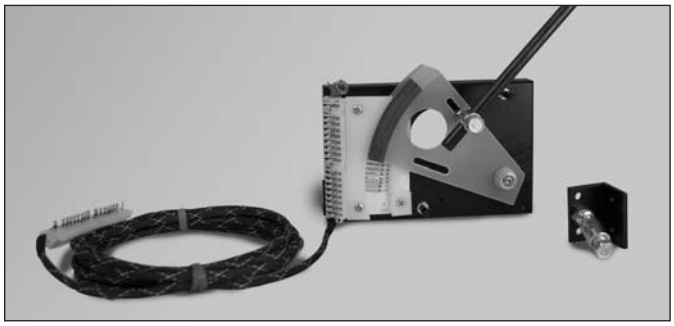
Round LED indicators are available in several colors.



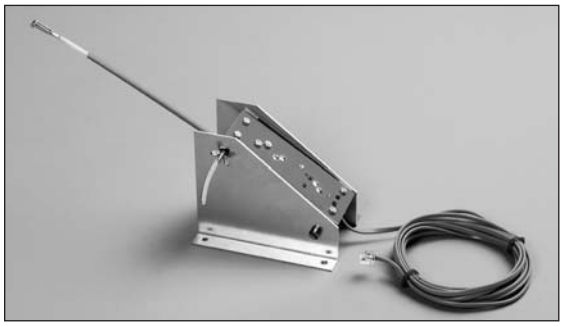
TECHNICAL INFORMATION



Bar graph LEDs are available in three colors, with or without engraving. See the ICS-4000 section for an optional bezel style.

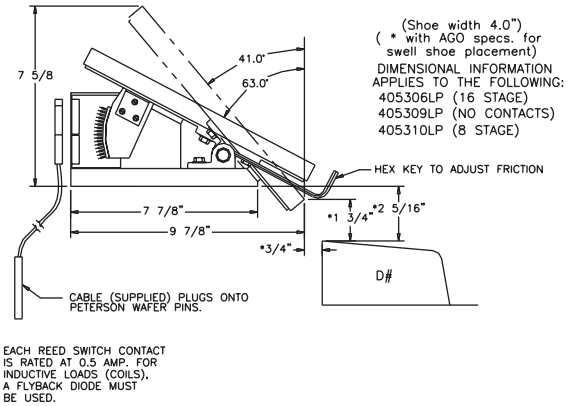


New reed switch expression contact assembly includes a cable and is very simple to install.

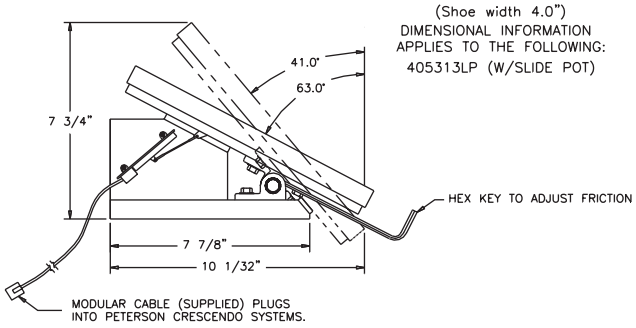


Crescendo encoder is for use with Peterson control systems and non-Peterson shoes.

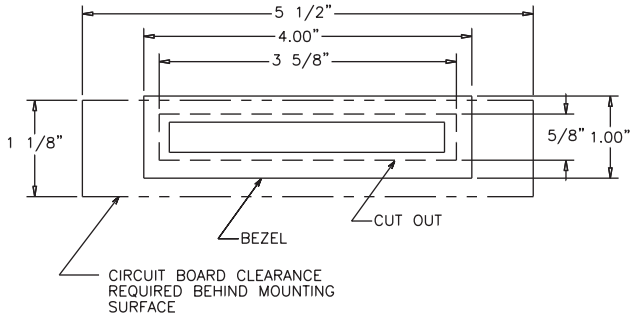
Expression Shoe Dimensions


(Shoe width 4.0")
(* with AGO specs. for swell shoe placement)
DIMENSIONAL INFORMATION APPLIES TO THE FOLLOWING:
405306LP (16 STAGE)
405309LP (NO CONTACTS)
405310LP (8 STAGE)
7 5/8
41.0"
63.0"
HEX KEY TO ADJUST FRICTION
7 7/8"
9 7/8"
*1 3/4"
*2 5/16"
*3/4"
D#
CABLE (SUPPLIED) PLUGS ONTO PETERSON WAFER PINS.
EACH REED SWITCH CONTACT IS RATED AT 0.5 AMP. FOR INDUCTIVE LOADS (COILS), A FLYBACK DIODE MUST BE USED.

Crescendo Shoe Dimensions

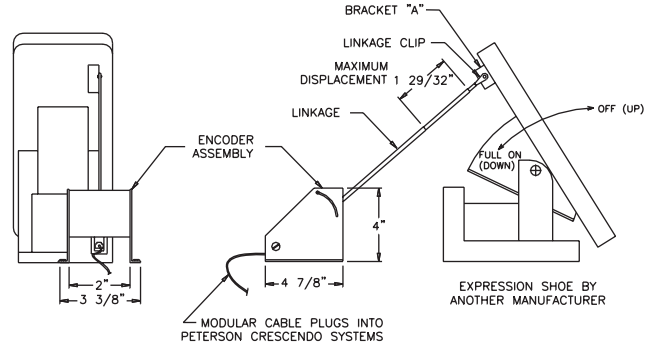


Mounting Information, Bar Graph Readout with Brass or Plastic Bezel



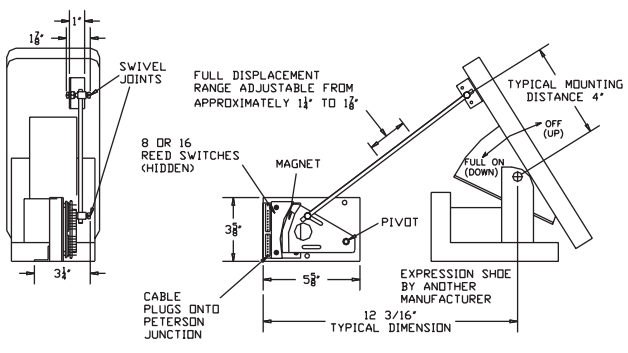
Crescendo Shoe Encoder

MOUNTING AND INITIAL ADJUSTMENT



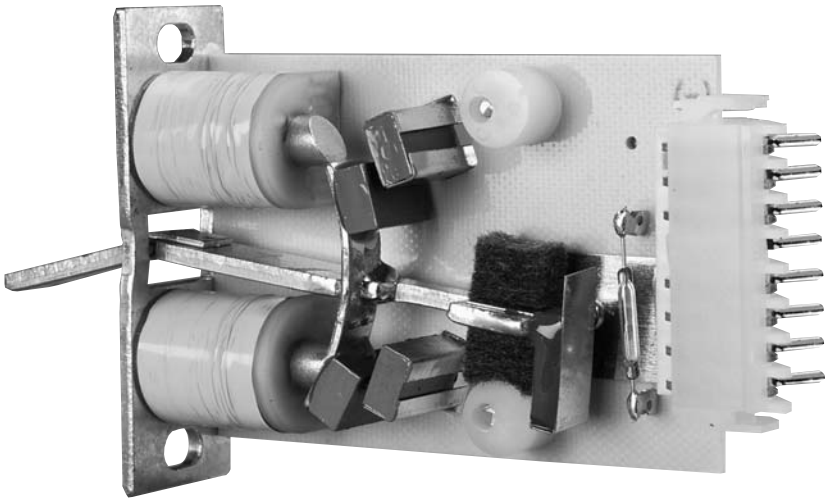
Expression Shoe Contact Assembly

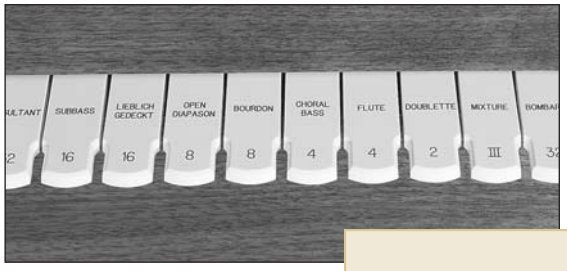
MOUNTING AND INTIAL ADJUSTMENT
(16 OR 8 CONTACTS)



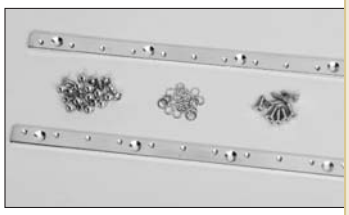
PowerTab™

"World Class" performance and feel





PowerTabs with notched style engraved tablets



Mounting Rail Kit

- Two pairs of repelling toggle magnets for an excellent "feel."
- Sturdy, precision-adjusted hinge.
- Large felt bumpers and convenient cam-style position adjustment.
- Reed switch contact for ultimate reliability with no maintenance.

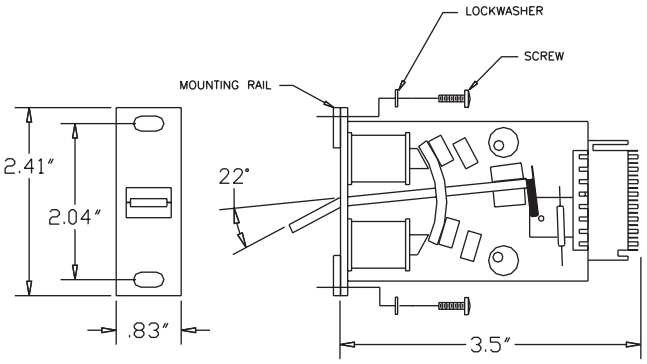
Peterson engineers designed the PowerTab™ to be the best feeling, most convenient to install, and most electromagnetically efficient product of its kind. A strong, smooth toggle action is provided by two pairs of repelling permanent magnets. A sturdy, precision hinge and large felt bumpers which rest against cam- action adjustable posts contribute to a quality feel and quiet movement.

The use of a patented Peterson discovery called "Tip Polarization" allows the firm toggle action force to be easily overcome during electrical operation of the "on" or "off" coil while maintaining compatibility with standard combination action voltage and current ratings. A hermetically sealed reed switch stop contact is provided for long term, maintenance free reliability.

Like other Peterson products, the PowerTab includes E-Z Wire™ connectors to simplify wiring. Complete custom wiring harnesses are available to totally eliminate the need to hand wire PowerTabs when used with any Peterson combination action system. To further simplify installation, we recommend the use of our Mounting Rail Kit. Each kit includes tapped metal mounting strips, machine screws, lock washers and flat head sheet metal screws for mounting up to eleven PowerTabs. Oval mounting holes make tab spacing easily adjustable.

Adapter brackets for various types of rocker tablet applications are available. These include direct-mount brackets for gluing a rocker face directly to the PowerTab, and two types of actuators for operating rocker faces that pivot on an independent axle. A Peterson customer service representative will be happy to discuss your requirements with you.

TECHNICAL INFORMATION



Power Tab Dimensions

General Specifications (for all Peterson stop controls)

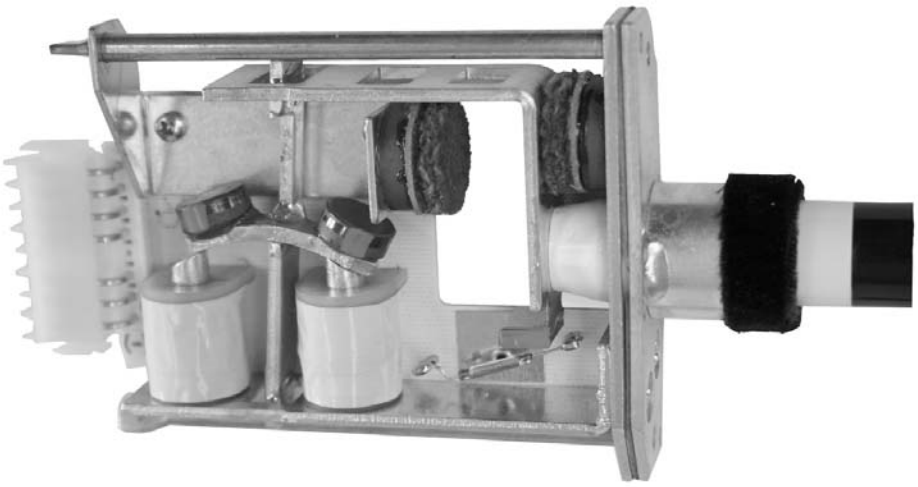
Exclusive, patented "Tip Polarization" improves efficiency: U.S. Patent Number 4,726,277. Specify negative or positive coil common polarity as determined by the combination action used. All Peterson combination actions require negative coil common. Coil resistance 21 Ohms +/- 1 Ohm. (42 Ohm coils available for 24 VDC applications). Reed switch contact current 500mA max. Inductive loads require diode suppression, available for a nominal additional charge. Stop contact may be fed with positive or negative common. This need not be specified when ordering unless fly back diode protection for inductive loads is requested.

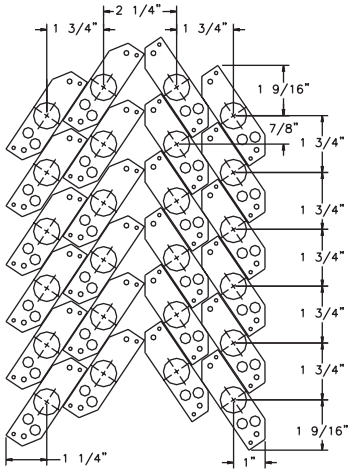
Specifications (PowerTabs)

Specify 22 degree angle for church organ tongue tab applications; 0 degree (straight) for rocker tablet applications; 10 or 17 degree for horseshoe style stop rails (consult the factory for more details).

PowerKnob™

Superior performance in a compact package





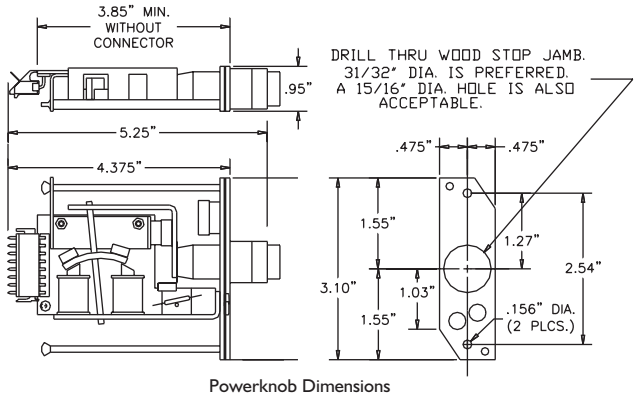
Typical Stop Jamb Layout

The Peterson PowerKnob™ represents a totally fresh approach to drawknob design. Its short length, two part mounting configuration and "nesting" layout pattern allow it to be easily installed in spaces that simply won't accommodate competitive products. Precision hinges, large bushing cloth bumpers and a firm magnetic toggle action give the PowerKnob a smooth, high quality feel.

The PowerKnob's unique design does not incorporate solenoids or parts that slide in channels. Instead, a pair of precision "zero clearance" pressed hinges provide quiet and rattle-free motion. A magnetic circuit similar to that of the PowerTab utilizes Peterson's patented "tip polarization" concept to optimize the power available from small coils, in turn contributing to the unusually compact size. A separate permanent magnet operates the reed switch contact, which is strategically located in a position free of stray electromagnetic fields.

The two part design of each PowerKnob offers unprecedented mounting convenience. The attractive velveteen bushing is provided on a steel plate designed to mount to the stop jamb first. Mounting screws can be installed through flat plates with no obstructions to get in the way.

After all bushing plates are mounted, the matching steel front plate of each PowerKnob body is positioned and then secured with special long thumbscrews. An optional custom wiring harness with E-Z Wire™ connectors can then be plugged in place to complete connection to any Peterson combination action.



Powerknob Dimensions

Drawknob stems are available in light ivory and black colors. Drawknob heads in your choice of three sizes can be custom engraved in a variety of font styles and several fill colors. Please contact a Peterson customer service representative for more information.

Specifications (PowerKnobs)

Each PowerKnob is supplied with a light ivory plastic shank with black ring.

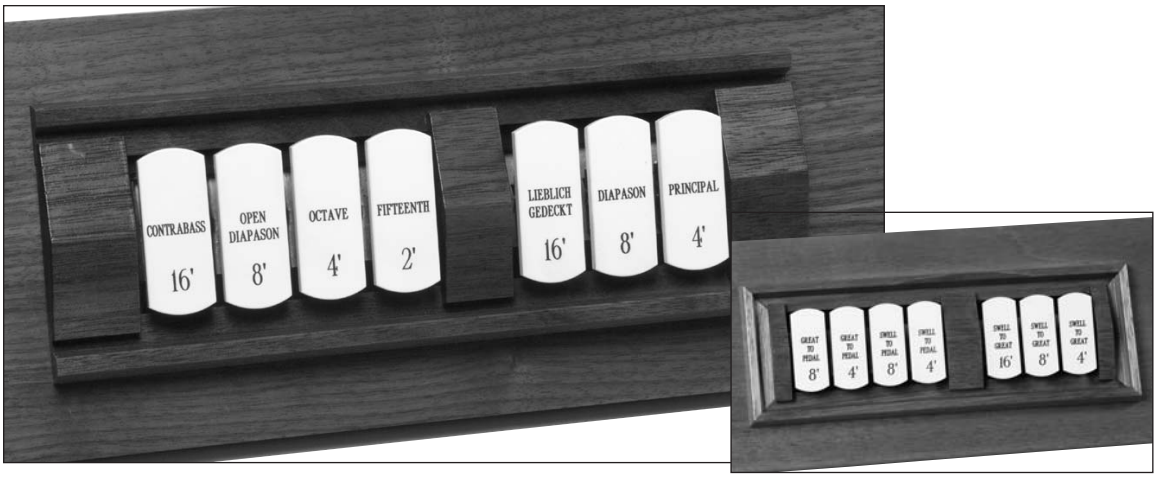
Stems are available separately in light ivory and black colors.

Heads are available engraved or unengraved in 1", 1-1/8", and 1-1/4" diameters, light ivory or black.

Bushings are brown velveteen. Black or blue bushings may be provided upon special order.

Z-Bracket™ Rocker Tablet Assembly

Outstanding look and feel, ready to install



A mitered frame for your Z-Bracket assembly may be installed on a new custom nameboard from Peterson.

- Short radius of rotation means great feel and minimal up and down motion of face.
- Smooth, sure toggle action.
- Uses quiet, durable Peterson PowerTab™ stop action magnets.
- Hermetically sealed reed switch contacts.
- E-Z Wire™ connectors allow Peterson wiring harnesses to be used.
- All rocker faces are custom engraved, then carefully mounted and aligned for a high quality appearance.
- Individual rocker tablets may be easily removed without disturbing the others.
- Wood spacer blocks and horizontal molding strips can be supplied in unfinished walnut, red oak, or mahogany. Please specify when ordering.
- Complete assembly includes everything needed for ordinary installation.

Each Peterson Z-Bracket™ Assembly is provided as a custom built, easy-to-install modular rocker tablet unit with an outstanding appearance and an elegant, top quality feel. The Z-Bracket name is derived from its innovative design that utilizes a "Z" shaped aluminum extrusion to position the pivot pin of modified PowerTab™ stop action magnets just behind the rocker tablet faces. By creating an unusually short axis of motion, this design minimizes up and down travel of the rocker tablet face without requiring separate pivots for the face and action magnet. The result is a quiet, smooth, and precise motion whether the rockers are operated by hand or with a combination action.

The entire assembly is provided ready to mount into a rectangular cutout in your stop panel. Removable wood trim strips, division spacer blocks, and end blocks supplied in your choice of walnut, oak, or mahogany can then be finished and fitted onto the front of the stop panel. The rocker tablet for an individual stop may be removed easily, if ever necessary, without disturbing any other tablets.

Custom wiring harnesses are available which eliminate all hand wiring of the rocker tablets to any Peterson combination action. Peterson can also provide a new custom nameboard with either of two Z-Bracket trim configurations, beautifully crafted to your exact requirements.

Specifications

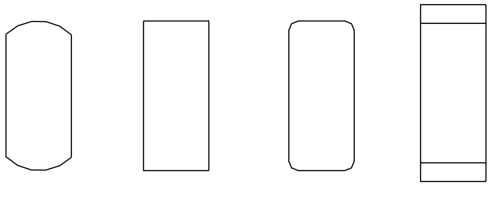
Exclusive, patented "Tip Polarization" improves electromagnetic efficiency: U.S. Patent Number 4,726,277. Specify negative or positive coil common polarity as determined by the combination action used. All Peterson combination actions require negative coil common. Coil resistance 21 Ohms +/- 1 Ohm. (42 Ohm coils available for 24 VDC applications). Reed switch contact current 500 mA max. Inductive loads require diode suppression, available for a nominal additional charge. Stop contact may be fed with positive or negative common. This need not be specified when ordering unless fly back diode protection for inductive loads is requested.

Rocker Tablet Faces may be provided in style A, B, C or D. Type B is the standard and will be supplied if no style is specified. Faces are available in light ivory color only.

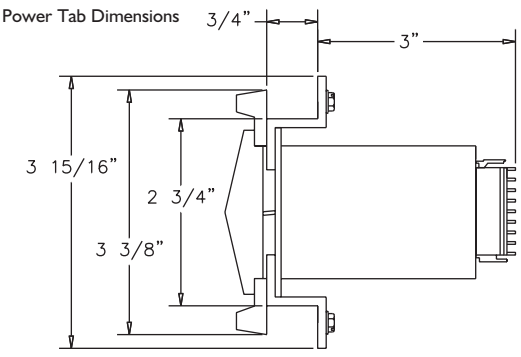
When ordering a Z-Bracket assembly, please list the engraving specification neatly and exactly as it should be engraved. Special engraving styles, sizes, and materials may be available on special order.

TECHNICAL INFORMATION

Rocker Tab Styles



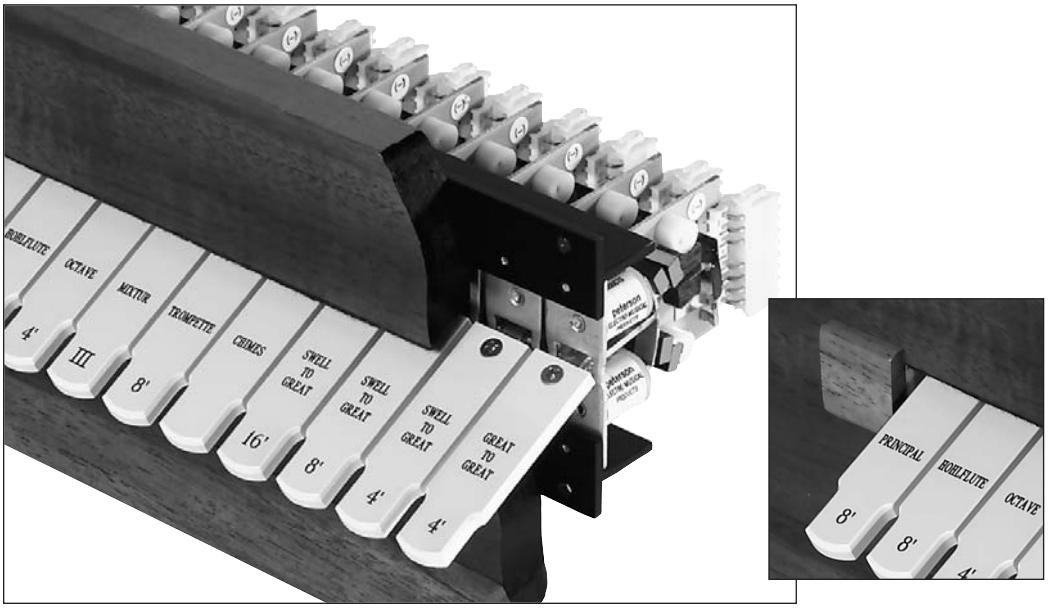
Power Tab Dimensions



TOTAL WIDTH OF Z-BRACKET ASSY. =
[(# OF TABS + # OF DIVISION SPACERS) X .9375"]
+ [(# OF END SPACERS) X 1.187"]

T- Rail™ Tongue Tablet Assembly

Fully adjusted and ready to mount



- Uses quiet, durable Peterson PowerTab™ stop action magnets.
- Hermetically sealed reed switch contacts.
- E-Z Wire™ connectors allow Peterson wiring harnesses to be used.
- Wood division spacers and end blocks can be supplied in unfinished walnut, red oak, or mahogany. Please specify when ordering.
- Complete assembly includes everything needed for ordinary installation.

Organ builders have long appreciated the outstanding quality and convenience of Peterson's Z-Bracket™ Rocker Tablet Assembly. Now a similar ready-to-mount assembly, custom built to your exact requirements, is available for tongue tab consoles!

The Peterson T-Rail Tongue Tablet Assembly utilizes 22 degree Power Tab™ stop action magnets for smooth, quiet performance. Tablets of either round- or notched-end style, in light ivory or black color, are engraved with your choice of font style and fill color. Each PowerTab is mounted to an extruded aluminum rail having a "T" shaped profile for rigidity. Using fixtures designed specifically for the purpose, each tablet is adjusted for an impeccable look.

After thorough testing and a careful final inspection, the T-Rail Assembly is crated and shipped to your shop, ready for simple mounting to the back side of a name board. Decorative spacer blocks in a choice of unfinished hardwoods, and all required mounting hardware, are provided with the T-Rail Assembly.

For the maximum labor saving advantage, we recommend that you order a custom made combination action harness to wire your Peterson stop controls to a Duo Set™, MSP-1000™, or ICS-4000™ control system.

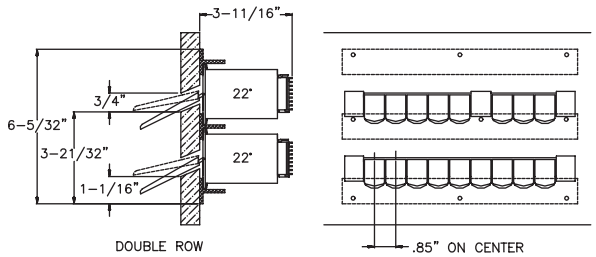
Specifications:

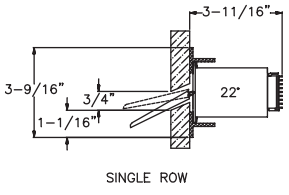
Exclusive, patented "Tip Polarization" improves electromagnetic efficiency: U.S. Patent Number 4,726,277. Specify negative or positive coil common polarity as determined by the combination action used. All Peterson combination actions require negative coil common. Coil resistance 21 Ohms +/- 1 Ohm. (42 Ohm coils are available for 24 VDC applications). Reed switch contact current 500 mA max. Inductive loads require diode suppression, available for a nominal additional charge. Stop contact may be fed with positive or negative common. This need not be specified when ordering unless fly back diode protection for inductive loads is requested.

When ordering a T-Rail assembly, please indicate whether round- or notched-end tablets are desired. If no preference is given, round-end tablets will be provided. List the engraving specification neatly and exactly as it should be engraved. Special engraving sizes and styles, including most "TrueType" fonts, may be available on special order.

TECHNICAL INFORMATION

T-Rail Dimensions





Dynatrem™

The modern approach to pipe organ tremolo

AC control box switches 117 VAC outlet with stop tab.

- Connects easily to virtually any reservoir.
- Symmetrical sharp & flat tremolo stays in tune.
- Uses no wind.
- Low cost.
- Compact size.
- Very quiet.

Standard connecting hinge.

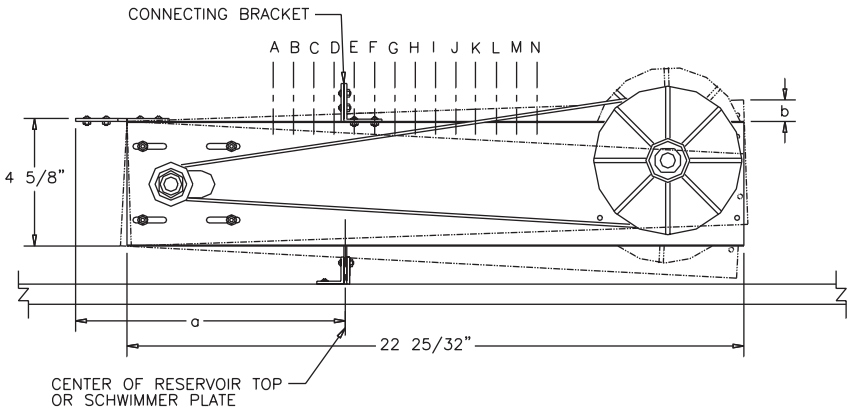
Schwimmer connecting hinge.

The Peterson Dynatrem™ represents a fresh approach to providing pipe organ tremolo. With this modern concept there is no need for extra wind capacity, muffler boxes, reservoir weights, or resonance adjustments that are usually associated with conventional tremolo units.

The Dynatrem causes air pressure variations both above and below regulated pressure, producing a pleasing, smooth tremolo. Tremolo speed and depth are easily adjustable. Because reservoir weights are not ordinarily needed for proper tremolo operation and only a small part of the weight of the Dynatrem itself is supported by the reservoir top, regulation can be made much more responsive. Often the performance of a reservoir with an existing tremolo can be greatly improved by substituting a Dynatrem.

The Dynatrem is also easily adapted to inverted reservoirs such as Schwimmers. In this case the Dynatrem is mounted beneath the chest and a small, easily disconnectable linkage is connected to the Schwimmer plate.

The patented Dynatrem (U.S. Patent # 4,319,513) is supplied with an AC Control Box ready to be connected to the tremolo stop at the console. The Control Box must be plugged into a live 117 Volt AC outlet by means of the line cord provided. An optional step-down transformer is available for use with 220 VAC nominal line current.



OVERALL DIMENSIONS : 4 5/8" x 4" x 22 25/32" LONG

Valves, Chimes, Power and Voices

Series II All-Electric Pipe Valve Page 28

SuperValve™ Page 30

Dual Slider Solenoid Controller Page 31

Cathedral Chimes™ Page 32

Solid State Chime Relay Page 34

Inteli-Power™ Page 35

Electronic Low Note Tone Generator Page 36

Console AC Control System Page 38

Series II All-Electric Pipe Valves

Precision engineered for quality and performance

- Precise pallet travel for quick, bounce free speech.
- Easy mounting with a single #6 screw.
- Offset spring allows easy access for a power screwdriver.
- Electromagnetic shunt and precision manufacturing lead to efficient performance.
- Chassis common mounting strip eliminates separate return wires.
- Locating tool simplifies accurate positioning of each valve.
- Four coil resistances (40,50,60 and 90 Ohms) and eight pallet sizes available (including SuperValve™).
- Stainless steel hinge pin in drilled bearings for longevity & quiet operation.
- All-electric primaries also available.

Over the years, "all-electric" pipe valves have always had many advantages, among them simplicity of chest design, durability and lack of dependency on perishable materials. On the other side, their higher power consumption made for greater complication in power supply, wiring and switching. In addition, there has always been controversy regarding the speech characteristics of various pipes when used on a chest designed with direct acting electric pallet magnets.

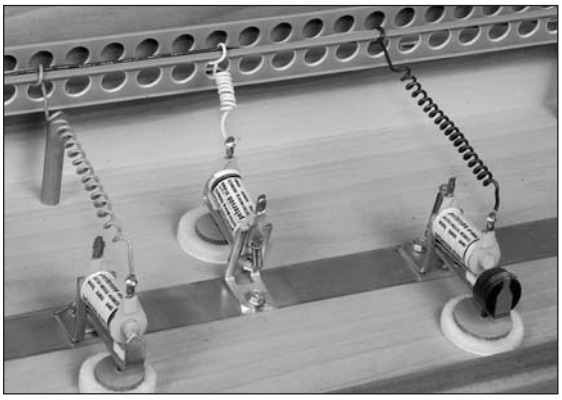
Today, modern technology has provided answers to all of the problems of stable power supply and higher current switching requirements. The use of solid state switching has also favorably influenced the speaking characteristics of pipes by supplying a measure of damping to the turn on and turn off of the electric valves.

In the early 1980s, Peterson spent several years researching this field with the objective of producing an all-electric valve that could withstand the most critical comparison with the best electro-pneumatic chests by pipe voicers and other tonal experts. The result is the Peterson Series II All-Electric Pipe Valve.

Through clever design and careful attention to detail, Peterson pipe valves provide a quick and bounce free response. Pallet travel is precisely controlled and tailored to the size and wind requirements of the pipe. Careful gap adjustment and a special electromagnetic shunt maximize efficiency.

Peterson pipe valves and their related accessories are also engineered for fast, easy installation. A single #6 screw is used to hold the valve in place, and clearance for a screwdriver is provided by offsetting the spring holder. Corner tabs dig into the toe board for a secure mount.

"All-Electric Primaries" are available with front or side tabs as shown for activating the threaded disk valve wires usually pulled by conventional primaries.



A toe board using the Buss Strip Mounting Kit and Keying Wire Spreader Kit.

The Pipe Valve Locating Tool.

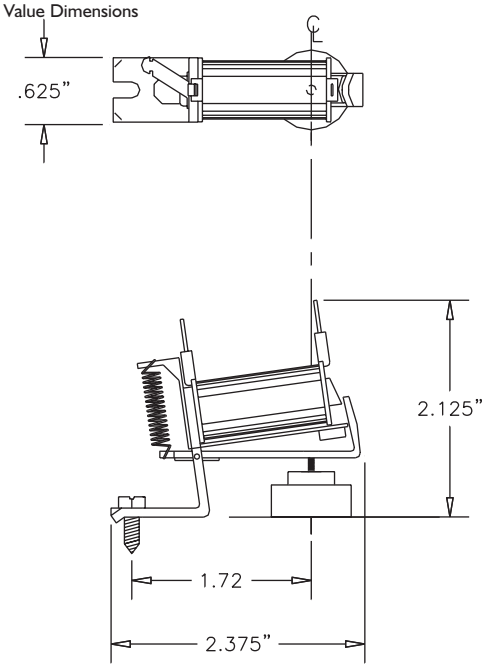
Our Pipe Valve Locating Tool makes initial layout of the valves a very quick operation by indenting the toe board to accept the corners of the pipe valve at precisely the correct location. By using the Peterson Buss Strip Mounting Kit, installation time can be cut significantly. Only one wire is required per pipe valve, and the available Keying Wire Spreader Kit makes running these wires easy. Custom chest cables using Peterson E-Z Wire™ connectors are also available, which plug directly onto Peterson driver boards.

An "All-Electric Primary" variation of the Series II Pipe Valve is available for applications where pneumatic operation of the note valve is preferred. Instead of a pallet valve, the All-Electric Primary has a side- or front-mounted tab with a hole and a grommet suitable for fitting to a disk valve wire as illustrated. This can take the place of a conventional chest magnet, channeling, and primary pneumatic, simplifying chest building or rebuilding.

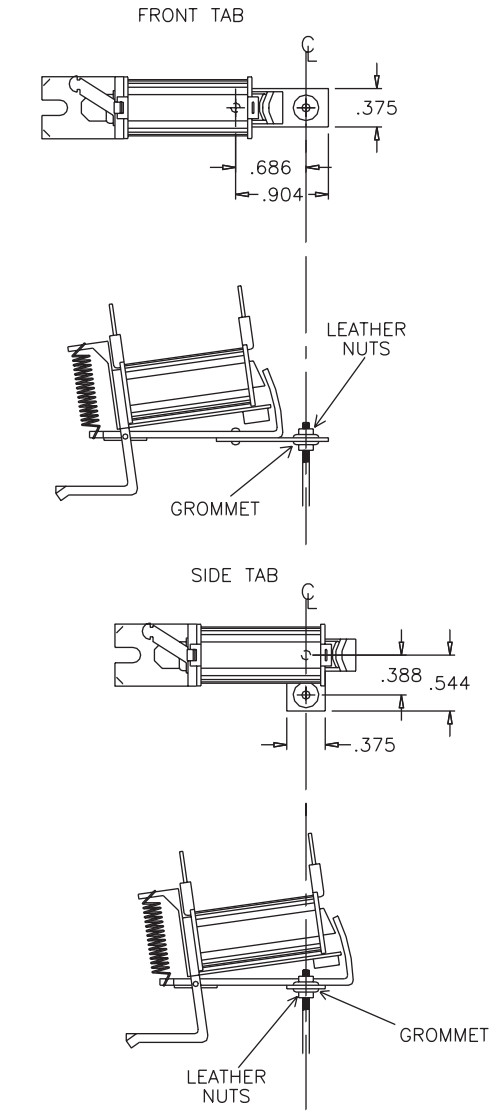
The Frame Adjusting Tool provides a convenient way to fine-adjust pallet travel without damaging hinges.

TECHNICAL INFORMATION

Series II Pipe Value Dimensions



All-Electric Primary Dimensions



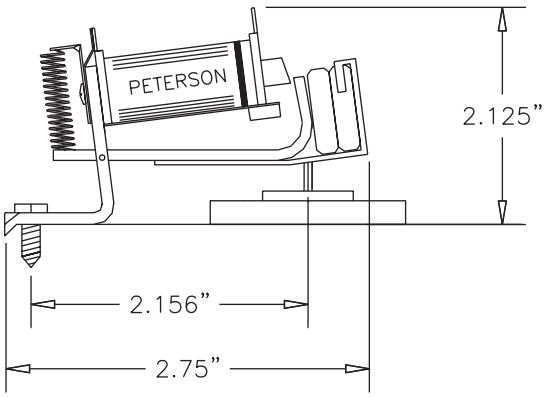
SuperValve™

Low note pipe valve

- Compact, economical valves for the low pipes on many manual chests.
- Patented "tip polarization" concept creates extraordinary efficiency.
- Pallets available in 1-3/8 and 1-1/2 inch diameter sizes.
- All the engineered advantages of other Peterson Pipe Valves.
- U.S. Patent # 4,851,800.
- U.K. Patent # 2,219,139.

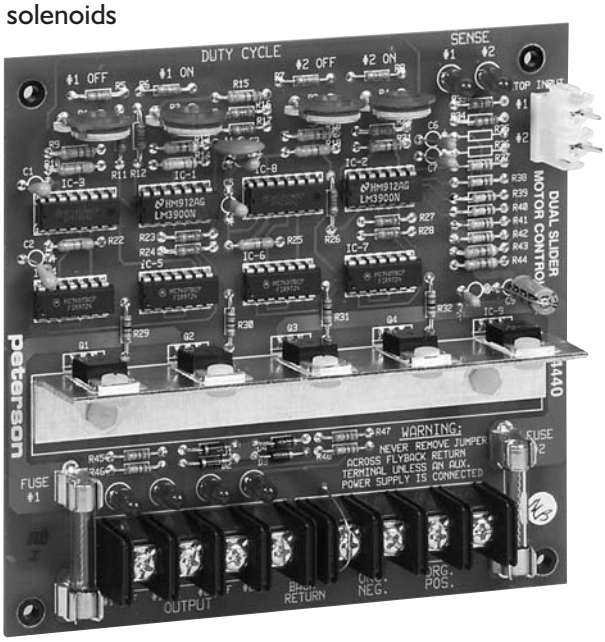
The Peterson SuperValve™ is a variation of the Series II Pipe Valve designed for the lower notes on most manual chests. The SuperValve combines all the features and advantages of our other pipe valves with larger, 1-3/8 or 1-1/2 inch diameter pallets and increased pallet travel. The electromagnetic efficiency required to pull these larger valves open against wind pressure despite the compact coil size and high resistance is derived from a patented Peterson discovery called "Tip Polarization". By employing a particular type of high energy permanent magnet near the polepiece end and armature tip, the pull-in force is increased dramatically, resulting in a high performance yet very reasonably priced pipe valve for this application. SuperValves are available with 40 Ohm and 50 Ohm coils. The Pipe Valve Locating Tool can be set to the correct dimension for mounting SuperValves by removing a wing nut and repositioning the cone rod.

TECHNICAL INFORMATION



Dual Slider Solenoid Controller

Compact, adjustable control of two slider solenoids



- Separate power adjustment for on and off direction of each solenoid.
- Rated to drive coils of 2.5 Ohms or greater.
- Positive in/ positive out, 12 to 18 Volts DC.
- Fused to meet NEC® requirements.
- Compact size for convenient mounting.
- LED indicators monitor inputs and outputs.

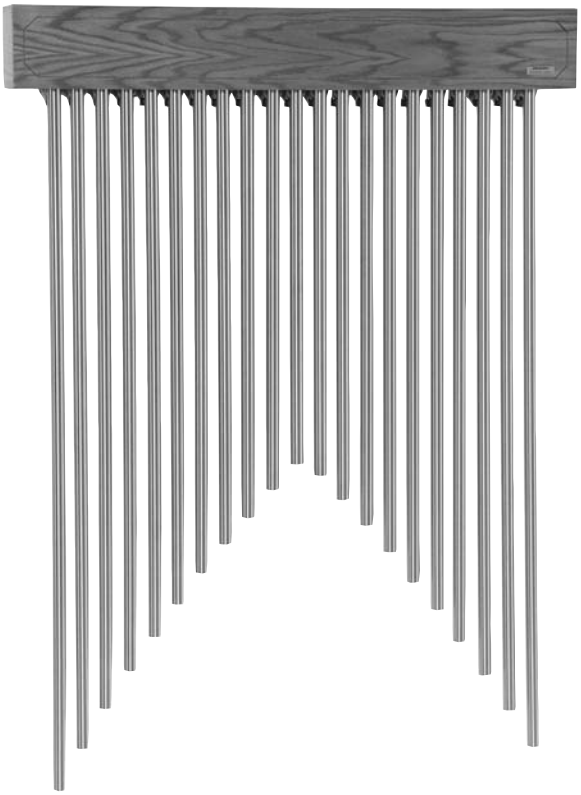
The Peterson Slider Solenoid Controller will operate two slider solenoids and has separate power adjustments for ON and OFF directions of travel for each. Other features include LED indicators at the inputs to the controller from drawknobs or stop tablets and at each of the four outputs. The outputs are fused consistent with National Electrical Code® requirements and the input and output polarities are compatible with those of most pipe organ control systems.

The optional use of a separate power supply to drive only slider motors is provided for with special screw terminal connecting points. The small physical size of the circuit board (5-1/2" x 5-3/8") allows mounting directly on the chest, or in almost any other desired location. This is often more convenient than card rack mounting configurations.

National Electrical Code® and NEC® are registered trademarks of the National Fire Protection Association, Inc., Quincy, MA, 02269.

Cathedral Chimes™

A fresh approach to organ chimes



- Patented striker design is quiet, efficient, and virtually maintenance free.
- Dampers lift off tubes for as long as a key is held.
- Solid state relay with fixed strike pulse timing is included.
- Very easy to install in most organs.
- Custom keying cables are available to further simplify installation.
- Beautiful brushed brass tubes or aluminum chime bars.
- Also available as an "action only" for use with older chime tubes.

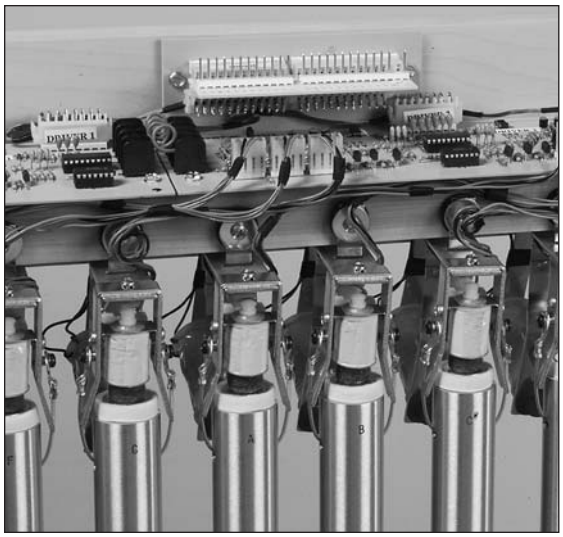
Some years ago, Peterson set out to see what could be done to modernize and improve the traditional tubular chimes that have been part of fine organs for decades. It was quickly realized that chimes and chime actions were still being made the same way they had been made 40 years earlier. They still had the same problems with imprecise tuning; uneven and difficult to adjust actions; heavy and hard-to-install cables; sparking contacts; and a host of other pitfalls all too well known to organbuilders and service technicians. A subsequent two-year development program was begun to address and overcome these concerns, and ultimately the Peterson Cathedral Chimes™ system was introduced.

Many significant developments contribute to this quantum step forward in bell and chime instrument design. An exclusive and patented magnetic repulsion striker action is maintenance free and remarkably simple, replacing heavy and rattle-prone striker solenoids altogether. A solid state relay is provided pre-mounted to the chime rail and wired to each note action. Timing circuitry delivers a uniform keying pulse regardless of how quickly a key is pressed. Electronically controlled dampers are lifted for as long as a given key is depressed for musical flexibility. A wide dynamic range is available through use of a five-position volume control switch.

Beautiful satin-finished brass chime tubes or silver colored anodized aluminum bars are precision tuned with Peterson stroboscopic tuning instruments and engineered for optimal harmonic development. A Peterson chime rail and relay may also be provided as an "action only" to replace an old, defective action while utilizing original tubes having diameters up to 1-1/2 inches.

The Cathedral Chimes system's easy connection to almost any pipe organ requires only a small cable, making it practical to display chimes and to better capitalize on their beautiful appearance. No separate relay, chime driver or independent contact system is usually required when connecting it to play from organ keyboards. Custom made keying cables are available from Peterson.

No adjustment should ordinarily be required after the system has been properly installed. The much simpler installation and set-up of this design saves valuable time.



Exclusive Magnetic Repulsion Striker Action Specifications

Dimensions: 21 Note Set: 50-3/4" L x 7-1/2" H x 6-1/2" D. Top of canopy to bottom of longest tube 70". 25 Note Set: 59-1/4" L x 7-1/2" H x 6-1/2" D. Top of canopy to bottom of longest tube 78-1/2". Split rail configurations are also available.

Tubes: 1- 1/4" seamless brass with no die lines or ridges. Precision strobe tuned and brushed to a satin gold finish, then lacquered to protect the chimes and keep them looking beautiful for years to come. Also available with solid aluminum bar chimes; brushed, clear lacquered and precision strobe tuned.

Electrical Requirements: Class II transformer (supplied) 110-117 Volts 50-60 Hz 50 VA.

Stop Control: The stop polarity is positive on a standard unit, but negative may be specified. Can be connected to an existing chimes stop tablet, if available.

Keying: Designed for easy connection to most organs using existing contacts. Factory assistance is available for specifics as to the best way of connecting to any pipe organ. Power to operate strikers is provided by the power supply included with the chime action.

Optional Canopy: Walnut or Red Oak with a clear satin finish. Other woods and custom finishes are available by special order at an extra cost.

Controls: 5-position volume switch with an additional "off" position.

Range: 21 Note Set: A-22 (440 Hz) though G-43 (1397 Hz); 25 Note Set: G-20 (392 Hz) through G-45 (1568 Hz).

All materials and workmanship are warranted for 10 years from date of purchase.

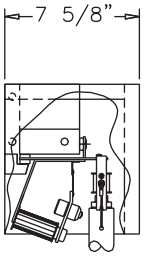
Cathedral Chimes Tube Arrangements

Key Assignment Chart

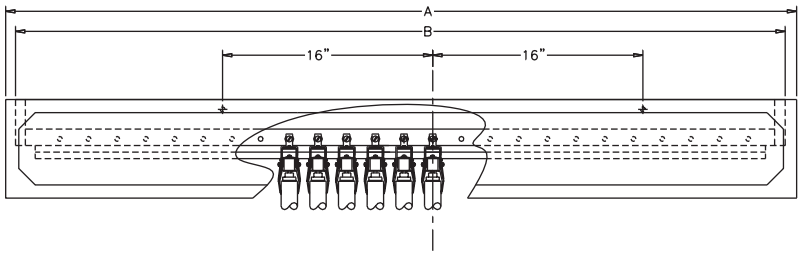
KEY INPUT # – 25 NOTE CHIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CHROMATIC LOW NOTE LEFT	G 20	G# 21	A 22	A# 23	B 24	C 25	C# 26	D 27	D# 28	E 29	F 30	B 31	G 32	G# 33	A 34	A# 35	B 36	C 37	C# 38	D 39	D# 40	E 41	F 42	F# 43	G 44
CHROMATIC LOW NOTE RIGHT	G 44	F# 43	F 42	E 41	D# 40	D 39	C# 38	C 37	B 36	A# 35	A 34	G# 33	G 32	F# 31	F 30	E 29	D# 28	D 27	C# 26	C 25	B 24	A# 23	A 22	G# 21	G 20
REGULAR "V"	G 44	F 42	D# 40	C# 38	B 36	A 34	G 32	F 30	D# 28	C# 26	B 24	A 22	G 20	G# 21	A# 23	C 25	D 27	E 29	F# 31	G# 33	A# 35	C 37	D 39	E 41	F# 43
INVERTED "V"	G 20	A 22	B 24	C# 26	D# 28	F 30	G 32	A 34	B 36	C# 38	D# 40	F 42	G 44	F# 43	E 41	D 39	C 37	A# 35	G# 33	F# 31	E 29	D 27	F 25	A# 23	G# 21
KEYING INPUT PIN # 21 NOTE CHIME			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		

For your convenience in wiring the keying inputs for your PETERSON CATHEDRAL CHIMES, this chart shows the assignment of notes to each pin on the keying junction for four popular configurations.

21 & 25 Note Chime Rail, Canopy Mounting Dimensions

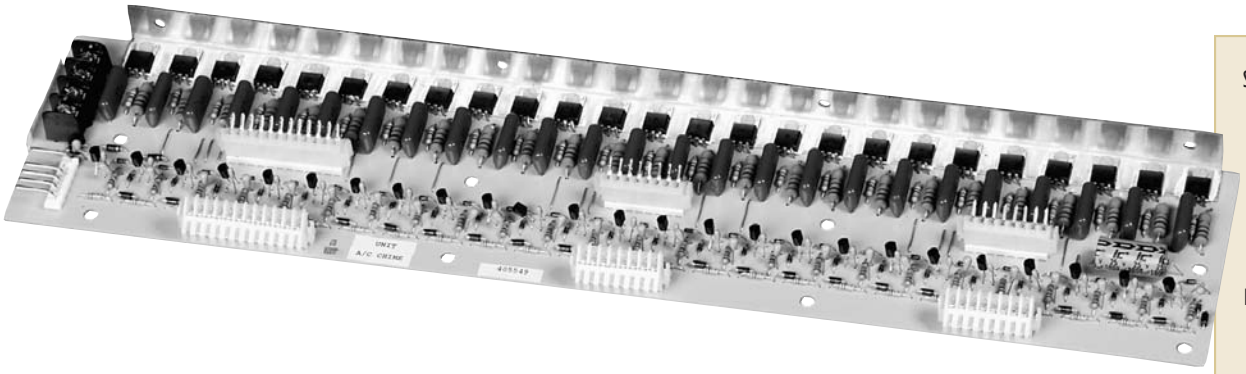


	21 NOTE	25 NOTE
CANOPY (A)	51"	59 3/4"
ACTION RAIL (B)	49 7/8"	58 5/8"



Solid State Chime Relay

Available for AC or DC chime actions



- Solid state reliability.
- Compact for easy mounting.
- Single wire stop control.
- A single low current key contact may be used for each note.
- 10 year warranty.

The Peterson Solid State Chime Relay is designed for use with tubular type chimes that have AC or DC operated solenoids. The high currents normally required to operate these chimes have traditionally required the use of special contact rails with leaf type switches or mechanical relays. Fitting contacts is often a problem and frequent maintenance is usually required to keep the chimes operational.

By using a Peterson Solid State Chime Relay the need for special contacts or mechanical relays is eliminated. The switching currents required to operate the relay are very small so that regular organ key contacts can be used. The Peterson Solid State Chime Relay can be operated from any available key contacts. It can, for example, be connected to the same contacts that are used to operate a straight chest, or that operate relay magnets. No gang switch is required since stop switching is accomplished in the Solid State Chime Relay. A single wire from the chimes stop tablet turns the chimes on or off. When used with organs having Peterson Solid State Switching Systems, the Peterson Solid State Chime Relay is connected to the same key switches that operate the rest of the Solid State Switching System.

Using the Peterson Solid State Chime Relay permits the use of a strike control switch that is normally supplied with the chime unit. The strike control switch changes the level of the AC or DC voltage applied to the solenoids, thus creating a softer or harder strike. The variable solenoid voltage may be connected to terminals on the chime relay assembly where it is then switched to the solenoids as the keys are played.

The small physical size of the relay assembly usually permits mounting it inside the chime rail under the dust canopy, or it may be mounted remotely or in the organ console. Mounting the relay in or near the chime rail provides the advantage that small wire can be used for the keying cable from the console to the chime unit because the switching currents are very low *(approximately .01 Ampere.)*

Two types of Peterson Solid State Chime Relays are offered. Type 1 is for the older chimes with AC operated coils. Type 2 is for DC operated chimes. When a Peterson Cathedral Chimes™ action is purchased, all required circuitry is supplied so this Solid State Chime Relay need not be ordered.

Specifications

25 Notes.

Input: (From key switches) positive 10 to 20 Volts* from organ rectifier.

Output: Up to 6 Amps per note.

Size: 18-5/8" x 4" x 1-1/2" (47.3 cm x 10.16 cm x 3.8 cm).

Net Weight: 1 pound (.45 Kg).

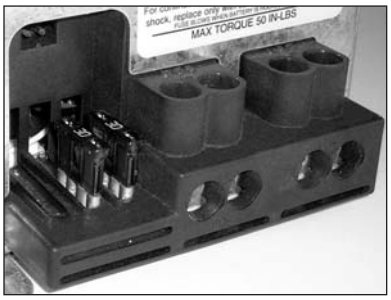
Shipping Weight: 2 pounds (.9 Kg).

Stop Control Polarity: Specify positive or negative polarity when ordering.

*Any voltage within this range works equally well. The level of this voltage does not affect chimes volume.

Inteli-Power™

A rugged source of well regulated power for pipe organs



60 Amp model shown.

After a long search for the ideal "switcher" type power supply for pipe organ use, Peterson has now partnered with a reputable, longstanding innovator in the power converter field to bring you the high quality, reasonably priced "Inteli-Power" product line. We have selected this line of power supplies for its excellent performance, rugged durability, and near-perfect match to the requirements and demands of modern pipe organ use.

Inteli-Power supplies are available from Peterson in 40, 60, and 80 Amp models. Each produces an extremely well-regulated 14.4 Volt output. Electronic current limiting automatically reduces the output voltage after maximum power capacity is reached. Unlike some competitive products, the output does not shut down abruptly when the current rating is exceeded. High voltage protection circuitry shields the power supply from spikes or surges over 135 Volts, and low line voltage protection shuts the converter down temporarily should the input voltage be insufficient for proper operation.

A thermal shutdown circuit turns off the power supply when its internal temperature exceeds 150 degrees F, protecting itself from damage due to excessive heat. Our testing has shown that the super-quiet cooling fan will only rarely come on during normal operation of an organ.

Convenient, heavy duty recessed-screw terminals for Positive and Negative outputs are provided as are permanent, "organ appropriate" mounting provisions. A three foot line cord can plug into a Peterson Console AC Control System* or Single Outlet Control Box for conveniently switching the power supply on and off. An external chassis grounding terminal is provided, but DC outputs are NOT internally connected to chassis ground.

Outputs can be combined in parallel to increase the total current available or in series to increase the voltage. Easily replaceable "blade type" fuses are provided for backward polarity protection. Unlike many other power supplies we tested, the Inteli-Power models will power-up properly under load — an important factor in many pipe organ applications.

Inteli-Power supplies are economically priced and usually available for immediate shipment from Peterson. A two year limited warranty is backed by Peterson and by the power supply manufacturer, a firm that has built over one million power converters for the Marine, RV, and Medical industries since 1964.

Specifications

40 Amp Model#407210-40
Input: 105-130 VAC, 50/60 Hz, 600 W
Output: 13.6 VDC, 40 Amps or 14.4 VDC, 37.8 Amps
Size: 4.5"H X 8.625"L X 7.25" W
Weight: 4.5 lbs.

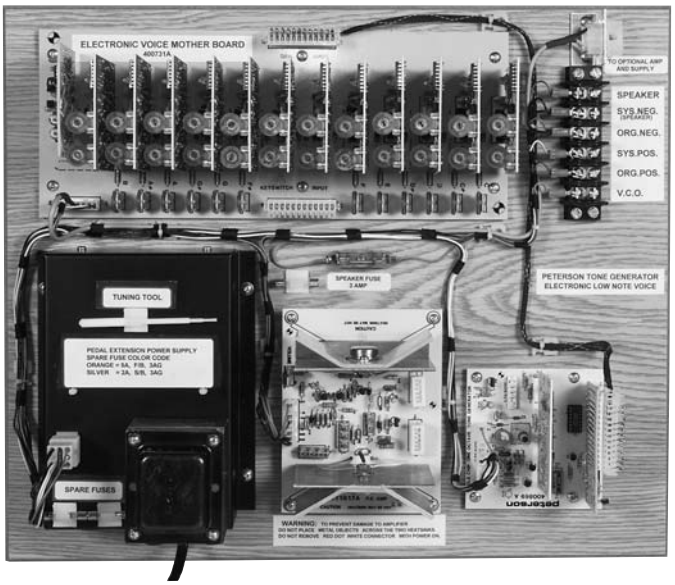
60 Amp Model #407210-60
Input: 105-130 VAC, 50/60 Hz, 1000 W
Output: 13.6 VDC, 60 Amps or 14.4 VDC, 57 Amps
Size: 3.6"H X 8"L X 9" W
Weight: 5.8 lbs.

80 Amp Model #407210-80
Input: 105-130 VAC, 50/60 Hz, 1300 W
20 Amp Circuit required
Output: 13.6 VDC, 80 Amps or 14.4 VDC, 75.5 Amps
Size: 3.6"H X 11.5"L X 9" W
Weight: 7.5 lbs.

*80 Amp power supply must be plugged into a 20 Amp 117 VAC circuit and is compatible with Peterson's 20A Single Outlet Control Box but not the Console AC Control System.

Electronic Low Note Tone Generators

Popular and versatile "analog/digital" extensions for pipe organs



- Superior tonal flexibility.
- Available in various reed, string, stopped flute, and open flue voices.
- Volume level & various tone quality factors are adjustable separately for each note.
- Combines digital and analog electronic technologies.
- Single control of tuning for all notes.
- Optional AutoTrack™ circuit automatically adjusts tuning.
- "High Power" voices are available for the most demanding applications.

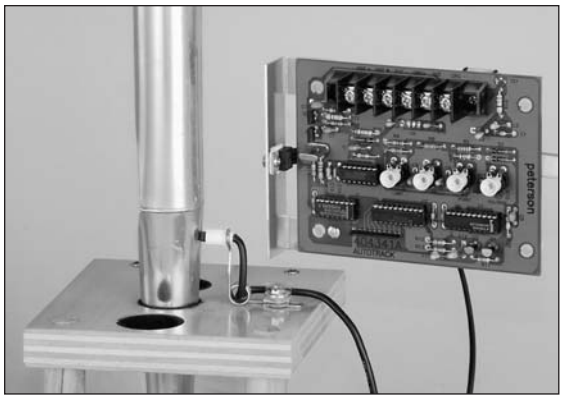
A pipe organ can often be greatly enhanced by extending a rank down to 16' or adding a 32' stop, but in many cases it is just not feasible to do this with pipes. In recent years, there has been an overwhelming increase in pipe organ builders' acceptance of the use of our high quality electronic voices to augment pipe organs where space, budget, or other considerations prohibit the use of additional pipes. Peterson engineers have dedicated countless hours to developing electronic tone generating equipment worthy of enhancing the world's finest instruments. It is gratifying to see many highly respected pipe organ builders using our voices to augment the pipes in their most prestigious installations.

Company founder Richard Peterson began working with the electronic generation of pipe organ sounds in 1948 and has long been respected as a pioneer in this field. Many patents have been awarded for the Peterson company's innovations in this area. Continued research over a period of more than five decades has lead to a keen understanding of the complex factors that give listeners to a pipe organ that certain "thrill" in a way that has never been duplicated in an electronic organ. This understanding has been invaluable in the development and evolution of these tone generators.

Today's Peterson Electronic Voices use a combination of digital and analog electronics technologies to "synthesize" complex waveforms similar to those that pipes produce. These systems process the harmonic structure of each note separately, which makes possible several adjustments on a note-by-note basis. This allows the character of each note to be slightly different, adding an extra degree of realism. It also permits enough flexibility so that the system can meet your exact tonal requirements, regardless of the characteristics of the room or the rest of the organ. This adjustability is extremely important where you are trying to match pipes, as is the case when using the tone generator to extend a rank.

Interestingly, many people believe that systems which play back digitally sampled recordings of pipes must inherently give the most "realistic" results. Our experience with digital sampling technology has allowed us to understand some important limitations inherent in sampled voices. For example, the relative amplitudes and frequencies of the partials within a sample are fixed, not independent and adjustable as they are in Peterson tone generators. When a sample of one note is "translated," or shifted in frequency to represent other notes, all notes derived from the sample have partials in the same ratios. As a practical matter, the sample is usually recorded from a pipe voiced for a different organ, in a different acoustical environment, which tends to make it more difficult to achieve the exact results that the organbuilder intends for his own instrument.

Another limitation results from the fact that only a single cycle, or at most a few cycles, of the steady state tone of the pipe is usually sampled. This short sample is then repeated over and over upon "playback" for as long as the note is held. This means the resulting tone lacks any of the random character that is so important in making us believe the sound is coming from a pipe. In fact, any random sounds such as wind noise are usually purposely filtered out when a sample is taken to avoid clicks at the sample rate when the note is played.

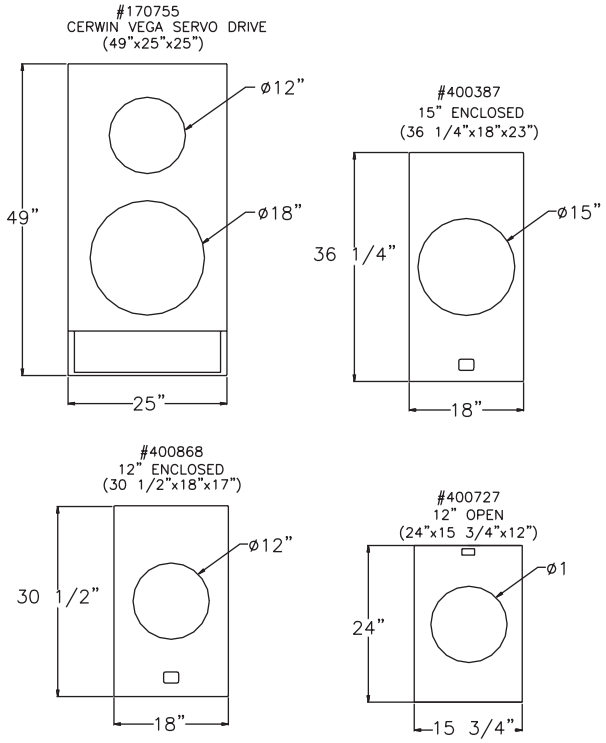


Optional AutoTrack™ includes a temperature sensor in a spring loaded holder.

One additional feature of Peterson Electronic Voice systems that we believe makes them superior to digital sampling systems on the market today is their lack of any dependence on custom parts or one-of-a-kind programs. Hundreds of Peterson voices in use today have virtually identical plug-in modules that use basic digital and analog electronic components that will continue to be widely available for many, many years.

By making intelligent selective use of digital and analog electronics, we are able to provide pipe organ builders with highly flexible, economical and dependable electronic tone generators that can enhance the finest pipe organs. We're so sure that you will be pleased with these systems that we offer the following guarantee: if any Peterson Electronic Tone Generator system fails to perform to your highest expectations, return it in new condition, within a reasonable time, for a full, prompt and unconditional refund. *(Installation and freight charges excluded.)*

Speaker Cabinet Dimensions



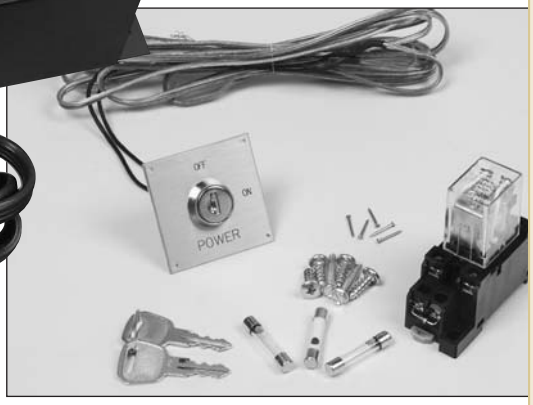
Specifications

Each Peterson Electronic Tone Generator System must be plugged into a live 117 Volt 60 Hz outlet and connected to an organ rectifier producing a voltage of from 10 to 18 Volts DC. A built-in relay switches the tone generator system on whenever the organ rectifier is energized. Standard systems require a positive keying voltage. Stop control is usually provided as part of a Peterson or other manufacturer's switching system, just as though the tone generator system were a set of pipes. Electronic expression control can be provided at extra cost if required, but it is common to provide expression by placing the speaker cabinet(s) in a chamber. Where appropriate, tremolo can also be provided at extra cost. Available options include loud/soft control so a single voice may be played at different volume levels from different stop controls; keying polarity inverter; tuning control to manually tune all Peterson electronic voices from the console with a single knob; a step-down transformer for use with 220 VAC nominal line current, and AutoTrack™ temperature compensating automatic tuning.

High power systems using special amplifiers and high performance heavy-duty speakers can be provided to handle even the most demanding situations. We will accommodate other special requirements you might have whenever possible. Peterson Electronic Tone Generator Systems for Pipe Organs are backed by a Ten Year Limited Warranty.

Console AC Control System

Simplest way to switch AC circuits



The Console AC Control System includes these accessories.

The Peterson Console AC Control System is a complete package of components designed to simplify switching of the organ rectifier, blower, console lights and other AC circuits from the console's main power switch. This product includes an electrical box with four unswitched and four switched 110 Volt AC outlets. An internal transformer and rectifier provides 12 Volts DC, which operates an internal solid state relay when the console switch contacts are closed. This zero-crossing solid state relay turns on the four switched outlets without producing radiated transients that could cause clicks and other interference with electrical equipment such as public address systems.

The transformer/ rectifier also provides a 12 Volt DC control signal whenever the console switch is on. This control voltage may be sent to the chamber in a conventional, OrgaPlex,™ or ICS-4000™ main cable to operate the contacts of the supplied chamber relay. The chamber relay is used to switch the voltage, usually 24 VAC or 110 VAC, that operates the blower starter and organ rectifier contactor.

Internal transformer windings also provide power for the Peterson OrgaPlex,™ Duo Set,™ MSP-1000™and MIDI Resource System,™ eliminating the need for separate plug-in transformers. The control system kit includes the main control box, chamber relay, and a console power keyswitch with engraved plate and wire. An optional "Console Power Latch" board should be ordered if you wish to use your own push buttons with normally open "on" contacts and normally closed "off" contacts.

The Single Outlet AC Control Box with 15 Amp line cord.

For convenience in switching 110 VAC devices from a stop tablet contact or other low voltage DC switch, Peterson also offers the Single Outlet AC Control Box in both 15 Amp and 20 Amp versions. An internal zero-crossing solid state relay prevents interference transients at the moment of switching.

- Allows the console to be plugged into any unswitched outlet.
- No need for conduit to the console or in the console.
- Greatly simplifies wiring of console to control AC devices.
- Simply plug in an AC music rack light, pedalboard light, console clock and other switched and unswitched AC accessories.
- Internal transformer supplies current for the OrgaPlex,™ Combination Action, MIDI interface and a control signal for chamber, blower and organ rectifier switching.
- Compatible with ICS-4000™ power switching circuitry.
- Internal solid state relay prevents PA system interference while switching.
- A "chamber relay" controlled from the console is provided to switch the operating voltage for contactors.
- A console power keyswitch & engraved plate are included.

Console Parts and Tuners

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Console Services for Organbuilders

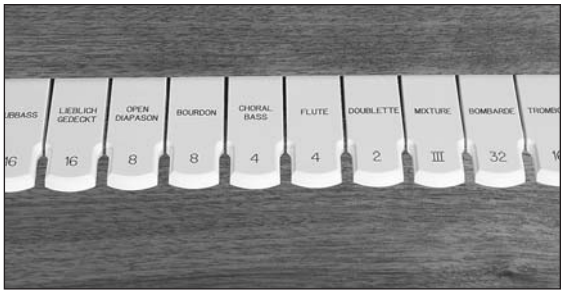
Expert factory installation of Peterson equipment

Nameboard and Stop Jamb Rebuilding and Replacement

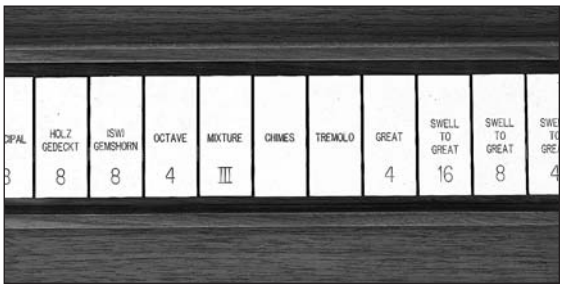
Did you know that Peterson's Console Services Department can refurbish or replace complete stop control panels for your console rebuild project? Utilizing this service is often an attractive and surprisingly cost-effective alternative to fabricating hardwood panels and fitting stop controls, nameplates, control panels and indicators in your own shop.

Older nameboards and stop jambs can be refinished and modified to accept updated equipment, or brand new panels can be constructed to your exact specifications and beautifully finished to match your color sample. All installed Peterson products are fully wired, final-adjusted, and tested for flawless operation.

With updated stop control panels and a Master Touch II™ keyboard assembly complete with cheeks, slips, and pistons, an older console will acquire a remarkably fresh new look and "feel" at an affordable cost.



Complete Console Rebuilding Services



In addition to nameboard and stop jamb services, Peterson offers organbuilders the option of having a console totally rebuilt. The process starts with thorough cleaning and either careful touch-up or complete refinishing of the console shell, followed by the installation of all required equipment. This may include fitting stop controls; new manual keyboards or key contacts; switching, combination action, and MIDI equipment; expression and crescendo shoes or new reed switch contacts and encoder; control panels *(in hide-away drawers where desired)*; indicator lights and bar graphs; pedalboard contacts; nameplates and engraved labels; and toe studs.

Any special structural or cosmetic modifications can be artistically carried out as needed. Pedalboards may be fitted with new key caps and re-bushed where appropriate. Consoles are then neatly cabled and thoroughly tested by the people who know Peterson equipment best of all. A comprehensive final inspection assures an impressive fit and finish that reflects painstaking attention to detail.

Since every console rebuild project is unique, please contact the Peterson customer service department for pricing and more details.

Engraving

Computerized precision; handcrafted attention to detail

Peterson can provide custom engraving in numerous font styles, now including most "TrueType" fonts*, and a choice of fill colors on solid brass plates or a variety of plastic parts and nameplate materials. Engraving is done on modern computerized machines, which allows much more flexibility than has been available in years past. We are pleased to supply engraved tongue and rocker tabs, drawknob heads, thumb pistons, builder's nameplates, indicator nameplates, division labels and toe stud labels for a large number of organbuilders worldwide. We welcome your special instructions, allowing us to provide just the look you need for any project.

*To learn more about TrueType fonts, you can visit the web site http://www.microsoft.com/typography/users.htm

Console Clocks

A useful "finishing touch"

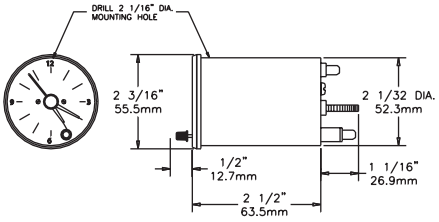
Digital Console Clock with Timer

The Peterson Digital Console Clock is an attractive, all solid state clock utilizing a four-digit Light Emitting Diode (LED) readout to display the time. The colon flashes at a rate of once per second. The Program Timer mode times events in minutes and seconds for up to one hour. A new, smaller sized escutcheon plate surrounding the clock display is brushed solid brass that will compliment any organ console.

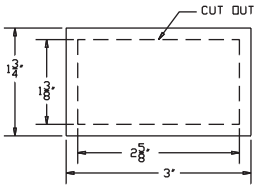
Traditional Analog Clock

Our stylish Analog Clock features a quartz movement, attractive chrome bezel, back lighted dial, black hands, and simple mounting. A plug-in class 2 transformer is included.

TECHNICAL INFORMATION



Analog Clock



Digital Clock

Tuners

The finest professional tuning equipment

V-SAM hand-held tuner.

Virtual Strobe soft case accessory.

Model 320

Peterson offers a full line of professional grade audible and stroboscopic visual tuners that is widely respected throughout the music industry. The first tuner to carry the Peterson name was developed more than 50 years ago specifically for tuning organs.

Many original Model 150 and Model 200 audible tuners from the 1950s and 60s can be found in organ shops and some are still used regularly. Since 1974, the Model 320 Seven Octave Audible Tuner has been the choice of a great many pipe organ tuners. Its calibrated vernier control and 1/3 of one cent accuracy throughout the full seven octave range allow tuning to any pitch with precision.

The newest models are motorless, battery operated hand-held tuners utilizing our patented "Virtual Strobe Technology™". A Liquid Crystal Display and cutting-edge technology create an authentic, real-time stroboscopic visual effect that is smooth and accurate down to 0.1 cent of deviation. There has never been a more precise, easier to use motorless tuner available at any price.

Peterson's VS-II Virtual Strobe Tuner™ features a built-in microphone; manual and automatic note detection/selection; adjustable Concert A reference in 0.5 Hz increments; pitch offset adjustment in 1 cent or 0.1 cent increments; and an assortment of built-in historical tuning temperament standards as well as equal temperament and a proprietary temperament for tuning guitars. The historical temperaments include Pythagorean, Just Major, Quarter-Comma Mean Tone, Kirnberger, Werkmeister, Young, and Kellner.

The V-SAM™ *(for Virtual Strobe/Audio/Metronome)* model adds a feature-rich metronome; an audible ten octave tone generator; adjustability to all key, tonal root and temperament combinations; and memory for user-defined custom temperaments. Both handheld Virtual Strobe models weigh less than 1.2 pounds. Our embroidered soft case with a shoulder strap is a popular accessory with organbuilders.

Other tuners available include the AutoStrobe™ 490, 490-ST, and 590 single-wheel motorized strobe models, the StroboStomp™ Virtual Strobe Pedal Tuner for guitarists, and the top-of-the-line SC-5000 II™ twelve wheel strobe tuner. For more information about Peterson tuners, please contact a customer service representative or visit our tuner-specific web sites, www.PetersonTuners.com and www.StroboStomp.com.

Conditions of Sale

Revised May 2004

TERMS

All payments are to be in U.S. currency. Terms are Net 30 Days to customers who have established a credit rating with Peterson Electro-Musical Products, Inc. Orders that include custom built equipment should be accompanied by a 1/3 down payment. A second equal payment is due when the system is ready for shipment. A 1-1/2% per month service charge will be added to any account that becomes past due. Any account that is chronically late in payment will be changed to C.O.D. only.

PRICES

All prices on the price list and specifications shown in printed and electronic form are current only at the time of publication and are subject to change at any time without notice. All prices quoted on custom work are valid for the time period specified or a period of 90 days from date of original quote.

LIMITED WARRANTY

Peterson warrants the equipment that it manufactures for use in pipe organs to be free from defects in material and workmanship under normal use and service, for a period of ten (10) years from the date of original shipment to the buyer unless otherwise specified in writing. *(See "10 Year Warranty Exceptions")*. Peterson's sole obligation under this warranty shall be that upon return of goods to the Peterson factory, transportation charges prepaid, Peterson will at its option repair or replace any equipment which it deems to contain defective material or workmanship and will return the repaired or replaced equipment to buyer, transportation charges prepaid. Peterson shall have the sole right upon inspection of any item of equipment or part thereof, to determine whether or not the defect is covered by the terms of this warranty.

During the standard warranty period, Peterson will also warrant its equipment in a particular installation against indirect lightning strikes. If the installation is considered to be at high risk to lightning strikes, it is required that certain precautionary installation procedures must be followed. These procedures will be specified in writing by Peterson. It is the responsibility of the buyer to check with Peterson prior to installation as to whether the installation is considered a high-risk installation.

This warranty does not cover damage due to direct lightning strikes. Peterson generally considers an occurrence of lightning to be a direct strike for this purpose when it results in physical damage to the structure or electrical power system *(such as wiring, electrical panel, motors, etc.)* of the building. Peterson reserves the right to inspect the installation site and Peterson's determination as to whether an indirect strike has occurred and/or the proper installation procedures were followed will be final. Peterson's sole obligation under this lightning warranty will be the same as listed herein regarding its standard warranty.

This warranty shall not apply to any equipment, or any part thereof, which has been repaired by others in a manner that does not conform with the Peterson standard for quality and/or workmanship; or which has been improperly used, abused, used in an unauthorized manner with components manufactured by another company, altered, damaged, subjected to accident, flood, fire, or acts of God; or on which any serial numbers have been altered, defaced, or removed. Peterson will not be responsible for any travel, dismantling, reassembly, or reinstallation charges.

This warranty is in lieu of all other warranties expressed or implied, including, without limitations, warranty for merchantability and fitness for a particular purpose as well as all other representations made to the purchaser. No person is authorized to give any other warranties or to assume any other liabilities on behalf of Peterson unless made or assumed by Peterson in writing. Peterson will not be liable for any special, indirect, incidental, or consequential damages, including damages claimed in connection with any rescission of this agreement by the buyer.

Peterson's warranty, as herein above set forth, shall not be enlarged, diminished, or affected by, and no obligations or liability shall arise or grow out of, Peterson's rendering of technical advice or service. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

CANCELLATION OR MODIFICATION OF ORDER

Upon cancellation of an order, the customer will be responsible for costs up to the time of the cancellation. When significant changes are requested after an order has been accepted, additional charges may apply. In cases where changes are requested after work has begun, the customer will be responsible for the costs incurred.

TRANSFER OF TITLE

Equipment remains the sole property of Peterson Electro-Musical Products, Inc. until payment is made in full. Peterson retains the right to demand return of said equipment to the factory at any time deemed necessary as long as full payment has not been received by Peterson. If said equipment has been used to manufacture an instrument, Peterson acquires part ownership of that instrument until the equipment provided by Peterson is paid for in full.

ROUTING

If there are no shipping instructions with the order, Peterson will use its judgement as to the best method of shipment. In the case of truck shipments, if you have a preferred carrier please provide this information at the time of ordering. Peterson will attempt to use that particular carrier; however, if it is not possible, a staff member will try to contact you for further shipping advice.

CLAIMS

All products are carefully inspected and tested before shipment. All claims for damage should be made directly with the carrier, as Peterson is not responsible for damage incurred during shipment. However, Peterson will make every reasonable effort to assist you in making any necessary claim with the carrier.

RETURNS

Equipment returned for credit should be shipped prepaid to the Peterson factory in new condition within 60 days of date on invoice and will be subject to a 10% restocking charge for testing and handling. This restocking charge does not apply where equipment is being returned on an exchange basis. Custom built equipment, in some cases, is not returnable. Any equipment or component showing evidence of abuse, misuse, improper handling, modification, or damage will ordinarily not be returnable. For clarification on specific equipment contact the factory. Equipment returned for servicing should be shipped prepaid with a note explaining the difficulty you have experienced. Normally, it will be return shipped to you within ten (10) business days or less.

10 YEAR WARRANTY EXCEPTIONS

BATTERIES

Nickel cadmium batteries in general have a life expectancy of about 5 years and will not be covered for the period exceeding 5 years. The recommended date for changing batteries should be marked on or around the batteries. In almost all cases the easily replaced batteries can be purchased locally (Radio Shack or camera stores) at minimal cost. Memory Backup Modules for Duo Set™ combination actions are now available for use in place of Battery Modules. Memory Backup Modules utilize capacitors instead of batteries, and are warranted for ten (10) years.

SWELL SHADE OPERATOR

The Swell Shade Operator will be fully covered for five (5) years from the date of purchase; however, during the period from five (5) to ten (10) years, there will be a maximum charge of $200.00 for repair of a motor or gear train only. All other components in the Swell Shade Operator are covered for the full ten (10) years. The gear motors in this product have an outstanding reliability history in thousands of installations over a span of more than twenty-five years.

SPEAKERS

Speakers are warranted for a period of five (5) years from the date of purchase. Normal life expectancy is far more than five years.

AMPLIFIERS

In situations where Peterson uses an amplifier that is not manufactured by Peterson, the amplifier will be warranted by its manufacturer. Peterson manufactures most of its amplifiers; please contact the factory for specific details.

TUNERS

Tuners are covered for a period of one (1) year from the date of purchase by the original end user. The warranty card must be sent back to the factory to register ownership and establish the date of purchase.

MIDI SEQUENCERS / DATA FILERS /

FLOPPY DRIVES

Floppy drives, sequencers and data filers that are distributed by Peterson are warranted by their manufacturer. Please contact the factory for details.

OTHER NON-PETERSON PRODUCTS

Products not manufactured by Peterson but distributed by Peterson are warranted by their manufacturer. Please contact the factory for details on these warranties.

SOFTWARE LICENSE AGREEMENT

The software and documentation provided with Peterson products are owned by Peterson Electro-Musical Products, Inc. and are protected by United States copyright laws and international treaty provisions. Therefore, you must treat this software like any other copyrighted material.

You must not copy the software or written materials accompanying the software. The software must not be used in any device other than the Peterson hardware that it was intended for. You may not reverse engineer, de-compile, or disassemble software provided by Peterson.

Peterson grants the license to use its software only in the product for which it was supplied.

Peterson warrants the physical media *(EPROM or other semiconductor device)* in which the software is contained to be free from defects and shall replace any such defective media free of charge during its general warranty period.

Peterson further agrees to provide a licensee of its software any updated version(s) of the same product's software, enabling the same features or options that were originally purchased, for a period of one year. This upgrade agreement applies to the software only and does not include hardware, shipping or installation costs and further requires the return of the software that is being replaced.

peterson

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